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RESEARCH UNDER NATIONALISATION

THOUGH, at the luncheon of the Gas Research Board reported in our columns last week, the Chairman of the Gas Council, Mr. A. E. Sylvester, emphasised that he was expressing his personal opinions and not making a statement of agreed policy, for details have not yet been discussed formally, his whole speech was one of lively encouragement and must have put fresh heart into those engaged in gas industry research. The task of the industry has not changed, nor will it change after May 1, and, of course, 'in overwhelming degree the same people will be doing the same jobs.' *Plus ça change—plus c'est la même chose.* In the Gas Act, 1948, research occupies a prominent position, and, in validation of section 3 of the Act the Gas Council must, in consultation with the Minister of Fuel and Power, not only arrange a programme of research, but see to it that the research is carried out—research both long term (fundamental) and short term (assumed to yield results which can be applied in practice within a comparatively short time). Now there is no doubt that much research or investigation carried out with meticulous care has been wasted because it has not been appreciated properly. For instance, the gas consumer, if he or she could express his wants or her wants in a technical way, would rightly demand the gas industry of 1949 to take out the sulphur content of the gas which he pays for—maybe nowadays at 1s. 6d. a therm. Research has been carried out into how sulphur compounds can be removed, but the gas industry as a whole thinks it best to supply sulphur compounds in gaseous form, and to charge for them. In this regard it has ignored research and repetitive recommendations. In this one respect the gas industry as a whole has, through *laisser faire*, adopted an attitude of weakness while talking considerably about service to the consumer. And there are other problems already solved by research and investigation, which require the solution to be taken from the printed page and transplanted to the gas pipeline.

As Mr. Sylvester said—and this is obvious enough—the Gas Council is not a scientific body ; but the Council is determined to take the very best scientific advice and to use as far as possible existing organisations. Nor did Mr. Sylvester overlook the contributions to research and development made by the larger gas undertakings (all too few with research organisations, however), the manufacturers of plant and appliances, industrial gas centres—and, of course, the universities, notably Leeds University. 'Yet,' he said, and here he has our full support, 'in spite of all that is being done, the total is far from adequate for a great and growing industry.' He added—and we would underline this—that 'with a new outlook on co-ordination may come re-assessment of our needs and opportunities in research and a more liberal investment of funds, for in this connection investment is a better word than expenditure.' It will, of course, be incumbent on the Director of the Gas Research Board to see that 'research' is not merely a pleasant, erudite, myopic occupation.

TRAINING GASFITTERS

THE gas industry as a whole depends more and more on a high degree of skill coupled with good personality on the part of its gasfitters to maintain an efficient service to consumers, for basically the gasfitter is an undertaking's most frequent and valued contact with consumers who judge the service efforts of the undertaking by the manner in which the gasfitter carries out his duties. Recognition of this fact lies behind the regional classification scheme for the preperation and examination of gasfitters, a description of which formed the subject of an interesting paper presented by Mr. J. L. Wilson, District Engineer of the Watford and St. Albans Gas Company, at a meeting of the Southern Association of Gas Engineers and Managers (Eastern District) on Mar. 29. Mr. Wilson's paper, of which we publish a summary on pp. 165-171 of this issue, detailed the organisation necessary to conduct examinations in conformity with the classification scheme and under the present conditions of difficulty of supplies and accommodation, and drew attention to the pitfalls and troubles which can confront the employer and the examination panel, even with the greatest care in organisation and the maximum effort to ensure the most scrupulous fairness to all grades of candidates.

While it is questionable whether young people approach examinations today with anything like the nervousness that prevailed a few years ago, we appreciate the efforts which are made under the Watford scheme to create an atmosphere of comfort and ease in the examination centres—even smoking is allowed nowadays to reduce the tension and assist a candidate in his approach to an unaccustomed task—but it is still a matter of doubt whether it is not expecting too much for a youngster to spend nine years in becoming a qualified gasfitter. Regional classification schemes differ in detail from one another, but on the whole it is assumed that a gasfitter trained in one region should be able to fit into another region, subject, of course, to any necessary specialisation to suit local circumstances. For instance, the industrial load in one part of the country might be very different from, say, the central heating or the commercial load in another part, and a gasfitter moving from one area to another would need, beyond his basic qualifications, a certain amount of training in the particular field to which he was allocated. The Watford Company has devoted much time and thought to the training of apprentices and spent liberally on necessary equipment, but in the opinion of Mr. T. C. Battersby the investment has been worth while.

THE HOLE IN THE ROAD

Because some gasworks employees dug a hole, 1 ft. 3 in. deep and 5 ft. 5 in. long, in a road at Otley and then left it unattended while they went for dinner, John Sewell, the foreman in charge, was summoned at Otley Police Court on April 8 for 'failing to fence a pit' and was fined 10s. Otley's police surgeon, while driving, did not see the hole, and his car dropped into it. The defence were obliged to admit that although there was 18 sq. ft. of earth piled round the hole between one and two feet high, this did not constitute a legal fence, and therefore pleaded guilty. The chairman of the court remarked that it was 'one of the most ancient offences, digging holes for other people to fall into.'

JOINT COMMITTEE ON CARBONISATION

A Joint Committee on Carbonisation has been formed under the Chairmanship of Mr. A. E. Sylvester, Chairman of the Gas Council, to examine the best means of co-ordinating the carbonising activities of the National Coal Board and the Area Gas Boards. The representatives of the Area Gas Boards on the Committee are Mr. E. Crowther (Chairman, Northern Gas Board), Mr. Henry Jones (Chairman, East Midlands Gas Board), and Mr. O. W. Wells (Chief Accountant, North Thames Gas Board). The National Coal Board will be represented by Mr. L. O'Connor (Director of Carbonisation), Mr. A. W. John (Deputy Director General of Finance), and Mr. R. J. Barritt (Divisional Carbonisation Officer, South Western Division). Mr. H. D. Greenwood (National Coal Board) is Secretary of the Committee.

AN OMISSION

In an article on the national and district gas organisations in the Centenary Number of the *Journal*, now being distributed, we endeavoured to present a pen picture of the outstanding men and events in those organisations, and as was inevitable in the circumstances—for it was impossible to compress the story into anything like 12,000 words—there were omissions. We were especially sorry to discover, too late, that in shortening the account of the National Gas Council we had struck out the name of Colonel SHOLTO S. OGILVIE, D.S.O., to whom is largely due the fact that the efficiency of the National Gas Council has never been surpassed, and who received the C.B.E. on his retirement. Colonel Ogilvie, as all but the newest comers to the industry are aware, was Joint Manager with Mr. E. J. Fottrell from 1919 until the N.G.C. became merged in the British Gas Council, and their retirement in 1947 was marked by presentations and memorable tributes to their services. Besides his work for the N.G.C., Colonel Ogilvie was for 23 years Joint Hon. Secretary of the Conjoint Conference of Public Utility Associations and on his retirement from that post he was presented with a portrait of himself by Mr. Frank Salisbury, the distinguished painter.

A GREAT ORGANISER

Mr. J. R. W. Alexander, General Manager of the British Gas Council, is the subject of No. 85 in the series, 'Man of the Month,' in this month's issue of *Scope*, the magazine for industry which has just received widespread congratulations on attaining its seventh birthday. The author, Olive Moore, takes the opportunity of picturing in brief the activities of the gas industry, with its embarked capital of £265 mill., its annual treatment of 23 mill. tons of coal, and its production of 484,500 mill. cu.ft. of gas. The main theme of the article, however, is the way in which Mr. Alexander handled the gas industry's case against State ownership. Strenuous opposition to the principle of nationalisation was followed, when once the change was seen to be inevitable, by earnest consultation at departmental level, not on the political issue but in the best interests of the gas industry, and with a view to the provision and maintenance of an efficient and economic public supply of gas. The article, which describes Mr. Alexander as 'a great organiser, a bonny fighter,' concludes: 'His genius for organisation and his reputation are such that high prizes await him in the business and industrial world if he cares to take them. We are worried about the gas industry and ourselves (the new owners) who can ill afford to lose the services of a man who has spent the first 20 years of his working life in the industry and has another 20 years of energy and enthusiasm to devote to it, an all-round experience of its needs, and the vision and courage to fight for them.'

EASTERN JUNIORS' COMPETITION

The need for the vital element of competition in the future composition of the gas industry is being loudly affirmed on all sides, and this applies not only to the industry's relations with other industries, but also to the relations of its own members. It appears likely that the competitive element will constitute a stronger incentive towards promotion among gas staffs than in the past—a state of affairs which we welcome as being likely to provide greater opportunities and higher standards, particularly among the younger members of the industry. We suspect that it was this belief that prompted the Council of the Eastern Junior Gas Association to promote a competition for the best paper contributed by any member of the Association who has not previously given a paper before this or any similar body. This decision shows initiative and reveals a proper interest in the ability of juniors to express their opinions from the platform and contribute to the ever-growing store of technical literature, which has been the industry's strength in the past and will be its guarantee in the future. The competition, which closes on Dec. 31, 1949, and the winning entries of which will be read on Mar. 8, 1950, is doubly welcome in view of the fact that in this young Association's life of less than two years, only two papers have been given by members, and these at the last meeting on Mar. 9. It is hoped that many members will answer the challenge and that the Eastern Juniors will take their place with the other Associations as the originators of individual thought and valuable technical information.

VESTING DATE

In the House of Commons, Mr. Boyd-Carpenter moved the annulment of the Gas (Vesting Date) Order on the grounds that the date selected, May 1, is too early for a smooth and efficient take-over of the gas industry by the State. He argued that the process of taking over 1,046 separate municipal or company gas undertakings and vesting them for all purposes in 12 area boards is a process of very great difficulty and complexity and that only a proportion of the senior appointments had been made. Another point he raised concerned the fact that the ordinary accounts of the municipalities end on Mar. 31 and that the gas meters of the municipal systems are generally checked about then. A similar check, he contended, will be necessary for the handing over on nationalisation and a great deal of unnecessary work would be entailed. Again, many of the consumers' councils have not been appointed. In support, Sir John Mellor asked the Parliamentary Secretary whether he would give an assurance that all consultative councils to deal with the interests of consumers would be established before vesting date. Replying, Mr. Robens expressed the view that it was desirable that when a Bill had been passed which completely reorganised an industry, in the interests of those employed in the industry, the technicians, managers, and others, there should not be an undue length of time between the passing of the Act and the vesting day. He said that Mr. Gaitskell hoped to be able to announce the names of the chairmen of the consultative councils very shortly, and it was hoped to establish the consultative councils within about three months of vesting date. Mr. Robens added that the reading of meters involved no administrative problem. After further short debate the motion was negatived on division.

APPROVED COKE APPLIANCES

The National Federation of Gas Coke Associations has issued replacement sheets to bring up to date the Approved Coke-Burning Appliances Handbook. It has not been possible to issue these earlier because many of the appliances have been under consideration by the Ministry of Fuel and Power and the British Standards Institution and it was decided to await the reports before proceeding with publication.

The Handbook was produced originally by the London and Counties Coke Association. Its revision has been undertaken by the Technical Committee of the National Federation of Gas Coke Associations and the National Federation has taken over the responsibility of publication and future revisions of the Handbook.

New sheets which *replace* sheets that are obsolete carry the same index designation as previously, but with '1948' added. It will be somewhat of a task collating new sheets into the Handbook, but when this is done, however, the Handbook will be the most comprehensive and authoritative of its kind that deals with coke and smokeless fuel appliances.

Personal

Mr. C. E. KNIGHT is relinquishing the position of Assistant Director of the Combustion Engineering Association, which he has held for the past two and a half years, to take up a post in the London office of Davidson & Co., Ltd., Sirocco Engineering Works, Belfast. Mr. Knight has also held the position of Secretary of the Underfeed Stoker Makers' Association.

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Mr. W. F. ANDREWS, who joined the Company 30 years ago, has been appointed Chairman and Managing Director of W. H. Dean & Son, Ltd., makers of the Dean gas heated washing machine, in succession to the late Mr. Wilfrid Dean, whose death is reported in this issue. Mr. Andrew first entered the gas appliance industry as a boy, serving for some time with Ewart & Son, Ltd., before joining W. H. Dean & Son, Ltd., in 1919.

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Mr. JAMES R. GLEDSON, General Manager and Secretary of the Blyth (Northumberland) Gas Company, has retired, but is to continue as a Director until the end of this month when the Gas Board will take over. Mr. Gledson has been with the Company 45 years and has been the recipient of a silver salver. Mr. Gledson joined the Company in 1904 as Assistant Meter Inspector. In 1919 he became Chief Clerk and Cashier and in 1928 was appointed Secretary. Thirteen years afterwards Mr. Gledson was appointed General Manager and Secretary and last year joined the Board.

Obituary

The death has occurred of Mr. WILFRID DEAN, of Southlands, Sixth Avenue, Blackpool, Chairman and Governing Director of W. H. Dean & Son, Ltd. (engineers, iron and aluminium founders, galvanisers and vitreous enamellers), of Victoria Works, Accrington Road, Burnley, makers of the Dean gas heated washing machine and boilers. He was associated with the firm for nearly 50 years. He was the son of the founder and it was under his management and administration that the business grew from small beginnings to be one of the largest manufacturers of wash boilers in the country. Mr. Dean was well known in the gas industry and together with his father was a pioneer in developing gas heated wash boilers and washing machines. When the firm was formed into a public undertaking he was appointed the first Chairman and Managing Director, which position he filled with distinction until the time of his death.

Appointments

North Eastern Gas Board

Of six Groups constituted by the North Eastern Gas Board to cover the area of the Board, appointments have been made of Group Managers to five Groups as follows:—

Leeds Group: N. G. APPLEYARD (Engineer and General Manager, Leeds Gas Department).

Hull Group: A. L. HIGHAM (Engineer and Manager, British Gas Light Company, Hull).

Bradford Group: C. A. NEWHAM (Deputy Engineer and Manager, Bradford Gas Department).

York-Harrogate Group: N. C. STURROCK (Engineer and Assistant General Manager, West Riding Group of Gas Companies, Wakefield).

Halifax Group: J. G. TILLEY (General Manager and Engineer, East Hull Gas Company).

North Thames Gas Board

On vesting day the North Thames Gas Board will take into the service of the Board all employees of the undertakings that will vest in the Board. To deal, however, in advance with the problems that arise and to make vesting as smooth an operation as possible certain appointments have been made and others may follow before vesting date; some have already been announced and a further list is appended. All other employees will continue to exercise the responsibilities that they held immediately before vesting date.

Solicitor, J. S. BARNES; Labour Relations Officer, W. G. BOYDEN; Chief Cashier, A. J. COVELL; Stores Superintendent, A. J. CROSS; Assistant Secretary, F. R. DARLING; Distributing Engineer, H. J. ESCREET; Stores Buyer, J. M. GRAMMER; Surveyor, G. M. HOOPER; Establishment Officer, R. E. MOBBS; Works Regulations Officer, A. G. PALMER; Chief Draughtsman, A. T. PHILLIPS; Products Salesman, S. ROBERTS; Assistant Accountant, L. W. SMITH; Senior Control Room Officer, G. M. TOBITT.

Uxbridge, Maidenhead and Wycombe, Slough, Ascot, Windsor.—J. W. KAYE to be Acting General Manager for the Districts as a whole; P. G. WRIGHT to be Acting Assistant General Manager for the Districts as a whole.

Chertsey.—Manager, F. SALTER; Chief Clerk, A. J. SAUNDERS.

North Middlesex.—Manager, F. DAWSON.

Hornsey.—Manager, K. L. MORTIMORE.

Lea Bridge.—Manager, D. C. CROSS; Accountant, N. H. DAVIS.

Commercial.—Manager, R. W. WOOD.

Romford.—Manager, A. R. SHIRLEY.

Diary

April 22.—**London and Southern Junior Gas Association:** Reception and Dance.

April 22.—**London and Counties Coke Association:** Finance Committee, 10.45 a.m.; Executive Committee, 11.30 a.m.; Central Committee, 12 noon. Grosvenor House, Park Lane, W.1.

April 22.—**Institution of Chemical Engineers:** Annual Corporate Meeting, May Fair Hotel, Berkeley Street, W.1.

April 22.—**Manchester District Association of Gas Engineers:** Annual Meeting and Luncheon, Grand Hotel, Manchester.

April 23.—**Manchester District Junior Association of Gas Engineers:** 'The Juniors and the Press,' Norman Smith. Engineers' Club, Manchester.

April 23.—**London and Southern Junior Gas Association:** Visit to Ponders End Works of the Tottenham and District Gas Company.

April 26.—**Southern Association of Gas Engineers and Managers (Eastern District):** 'The Selection and Design of Gas Condensing Plant,' K. W. Francombe and A. G. Grant. Gas Industry House, 2.30 p.m.

April 26.—**Midland Junior Gas Association:** Annual General Meeting.

April 26-29.—**Women's Gas Council:** 'Home and Citizenship' Conference. Hydro Hotel, Harrogate.

April 26.—**Wales and Monmouthshire Junior Gas Association:** Annual General Meeting. Barry Hotel, Barry, 2.30 p.m.

April 28.—**British Gas Council:** Annual General Meeting. Gas Industry House, 11 a.m.

April 28.—**Federation of Gas Employers:** Twenty-Seventh Annual General Meeting, Gas Industry House, 11.45 a.m.

April 28.—**Yorkshire Junior Gas Association:** Short Paper Day. J. Wilkinson (Sheffield) and C. G. Reeve (Wakefield).

April 28.—**Institute of Fuel:** Annual Luncheon, Connaught Rooms, London, 1 p.m.

April 30.—**Western Junior Gas Association:** Visit to Hollacombe Works. Annual General Meeting and Presidential Address. Torquay.

May 3.—**Scottish Junior Gas Association (Western District):** Visit to Babcock & Wilcox, Ltd. Renfrew.

May 6.—**North of England Gas Managers' Association:** Annual General Meeting, Newcastle-on-Tyne. 'Sulphur Removal,' Dr. L. A. Moignard, M.A., D.PHIL., A.R.I.C. (Gas Research Board).

May 7.—**Manchester District Junior Association of Gas Engineers:** Visit to Lancashire Dynamo & Crypto Co., Ltd. Three Papers by staff members at Liverpool.

May 11.—**Eastern Junior Gas Association:** Visit to Colchester. Annual General Meeting.

May 13.—**London and Southern Junior Gas Association:** 'Scale Formation in Water Heaters Due to Hard Water,' R. Kerr, PH.D. (Nash & Thompson, Ltd.). Gas Industry House, 7 p.m.

May 25.—**London and Southern Junior Gas Association:** Visit to Stanton Ironworks, Nottingham.

May 25.—**Manchester District Junior Association of Gas Engineers and Yorkshire Junior Gas Association:** Joint visits to Rochdale Road Works and West's Gas Improvement Co., Ltd. 'A Review of Carbonising,' Mr. Gaskill (West's Gas).

May 28.—**Scottish Junior Gas Association (Eastern District):** Annual General Meeting, Kirkcaldy.

The Twenty-Seventh Annual General Meeting of the Federation of Gas Employers will be held at Gas Industry House on April 28, at approximately 11.45 a.m. and immediately following the Annual General Meeting of the British Gas Council.

Instructional Talks were recently given by Mr. G. F. Jenkins, Sales Manager of Main Water Heaters, Ltd., to the inspectors, fitters, and maintenance staff of the Perth Gas Department as part of the regular training scheme. The various features of substantial construction and ease of installation were illustrated by lantern slides and sectional models and were further enlarged upon in discussion after each session.

WORCESTER GAS ORDER

An Opposition request to the Minister of Fuel and Power to reconsider the proposed siting of the new gasworks at Worcester was considered in the Commons on April 12, when the Worcester Gas Order came up for confirmation. Mr. George Ward, M.P. for Worcester, pressed for the deletion of paragraph (a) of the third schedule of the Order, which lays down the position of the new site. He based his argument on the fact that the proposed site at Perry Wood would result in a serious interference with the amenities of post-war Council houses in the immediate vicinity. He deprecated the apparent indifference of both the Ministry of Health and the Ministry of Town and Country Planning who, he said, had made no attempt to enquire whether there was not an alternative site. The Ministry of Fuel and Power had said that there was no other site which was technically suitable and available, but against this he suggested that there was a site at Blackpole, farther to the north, in many ways more technically suitable than the proposed site. He understood that this had been turned down by the Ministry of Town and Country Planning on the grounds that it was not all within the city boundaries and that it was scheduled as a green belt. He did not think that this was a valid argument if 15 acres of green belt were compared with the lives of many thousands of men and women in Worcester. Mr. De La Bère, M.P. for Evesham, seconded the amendment.

Alternative Site at Astwood

In reply, Mr. Robens, Parliamentary Secretary to the Ministry of Fuel and Power, said that consultations had taken place with the Ministry of Health and the Ministry of Town and Country Planning, and agreement had been reached by Departments in the ordinary administrative way. As a result of the public enquiry the area to be used for the gasworks had been considerably reduced. There would now be a belt between the actual buildings of the gasworks and other land—a belt of sports fields and things of that character, a belt in which there would be no smoke emission and no fumes. The Worcester City Council first knew about the scheduling of the site in July, 1945, and it was not until December of the same year that their housing programme was approved by the Ministry of Health. If they had got on with the housing programme subsequently it was no fault of the promoters of the Order. The alternative site suggested at Blackpole was on fairly good agricultural land. It was in a green belt which the local planning authority had decided should be kept free from industry. If they were to choose that alternative site, they would have the same kind of representations all over again, and he thought that there would be good grounds. He had, however, informed a deputation from the Worcester City Council that if they could find an alternative site, he would ensure that, despite the passing of the Order, the Area Board, which would be operating by the time the matter came into practical effect, would give consideration to that site. As a result the Council were considering a site at Astwood. He had referred the matter to the Chairman of the Area Board, and if the site should prove suitable there would be no difficulty about going to Astwood.

No Development for Six Months

Mr. Robens asked the House to approve the Order. It was necessary that something should be done unless Worcester were to be deprived of the gas it needed to maintain full employment in the city. The Company needed powers to go ahead with the placing of orders and determination of the size of the site. It would be six months before there would be any physical alteration to the site, and in that time would be an opportunity to find an alternative. In answer to a question, Mr. Robens said that he was not prepared to give an assurance that there would be no objection to selecting a site in the county beyond the city boundaries. He could only give an assurance on behalf of the Area Board, the Ministry and the Worcester City Council, that if it were possible to find a new site within the area of the Council that fresh site would be used, and the present one abandoned. Mr. Brendan Bracken, M.P. for Bournemouth, asked whether the Minister of Fuel and Power was now going to give directions to the Area Board that for six months a real effort was to be made to find an alternative site. Mr. Robens replied that the Minister was not going to give a direction to anyone. He had already spoken to the Chairman of the Area Board and he had given the assurance with his authority. Mr. Bracken then said that this was not an adequate guarantee, and suggested that the House should divide on the amendment. Mr. Robens immediately said that in that case he would withdraw the assurance that he had given. Finally, the division was not called and the Order was confirmed, after a minor amendment also proposed by Mr. Wade had been defeated.

The Institution of Gas Engineers has published a new grey edition, *British Gas-Making Coals*, by Dr. J. G. King (Communication No. 339/153). Copies are available from the Institution, 1, Grosvenor Place, S.W.1, price 2s. 6d. post free.

ASSOCIATED GAS AND WATER UNDERTAKINGS

In a statement which accompanied the accounts of Associated Gas and Water Undertakings, Ltd., for the year ended Mar. 31, 1948, the Chairman, Mr. W. H. Bennett, showed that if the British Gas Stock to be issued in place of the Company's holdings bears interest at 3% and is issued at par, as in the case of British Electricity Stock, holders would lose from 23% to 40% of their income according to class of stock. At the subsequent annual meeting support was given to a stockholder's suggestion that the Directors should formulate proposals by which stockholders might be able to minimise the reduction in their income.

The Directors have decided to develop an investment company with the object of acquiring from stockholders their holdings in the Company, which is due to be dissolved on May 1. To this end they have acquired the registration of Monument Securities, Ltd., the authorised capital of which has been increased to £500,000. The Company will be administered by the same persons as are now Directors of Associated Gas and Water Undertakings, Ltd., and they will be responsible for the investment of the funds derived from the sale of British Gas Stock received by the Company in respect of Associated Gas and Water Stock which it receives from those stockholders who wish to participate.

Holders of all classes of stock in Associated Gas and Water Undertakings, Ltd., have been invited to exchange their holdings for fully paid stock in Monument Securities, Ltd., of a nominal value equal to the value of their present holdings when calculated at nationalisation prices. The authorised capital of Monument Securities is divided into £250,000 of 4½% Redeemable Cumulative Preference shares (1974-84) and £250,000 of Ordinary shares. The offer, which closes on April 26, is conditional on acceptances being received in respect of at least £150,000 stock of Monument Securities, Ltd.

A report from the Company's auditors shows that no profits were earned or losses incurred by the Company during the ten years ended Mar. 31 last. Monument Securities, Ltd., was incorporated as a private company in 1935 and was converted into a public company on April 8 this year. The prospectus indicates that the Company's income will be derived from dividends, interests on loans, commissions, &c.

News in Brief

Belfast Police Committee, which is charged with public street lighting, has recommended a return to the pre-war standard of street lighting, subject to approval by the Finance Committee. The cost will be £32,000 for the current financial year, made up of £2,000 for electricity and £30,000 for gas, and is additional to £150,000 already authorised for public lighting.

The Coal Tar Research Association, now incorporated under the Companies Act of 1948, has leased premises at Gomersal, near Leeds, for its research station. Conversion is proceeding, and it is expected that the move of the headquarters from the present address, 9, Harley Street, London, W.1, will be made in June, and that the laboratories will be completed later in the year.

The Trade Statistics for February, just issued by the Department of Industry and Commerce in Ireland, show imports of 16,352 tons of gas coal, valued at £74,465, as against 35,059 tons, valued at £157,257, in February, 1948. This brings the total of these imports for the first two months of 1949 to 31,391 tons, valued at £149,777, compared with 49,220 tons, valued at £211,392, for the corresponding period of 1948.

The Advisory Council of the Department of Scientific and Industrial Research has agreed to appoint a Committee under the Chairmanship of Dr. H. W. Cremer to review the needs for research in the field of chemical engineering. The Committee's terms of reference will be 'to review the needs for research in chemical engineering and the extent to which they can be met by existing research establishments.'

The Cornish Gas Association is making an appeal to all gas undertakings to subscribe to a fund which is being raised by the Association to repair and preserve William Murdoch's house at Redruth, in which he lived from 1782 to 1798 and carried out his gas-lighting experiments. The intention of the sponsors of the fund is to produce a revenue which will provide for all time the necessary annual amount for the building's upkeep.

The Ministry of Supply has set up an Industrial Gas Turbine Development Committee under the chairmanship of Sir William Stanier. The Committee's work will be to keep under continuous review the full exploitation of the industrial application of the gas turbine, and to recommend to the Ministry any further research or development work. The members of the Committee include Dr. D. T. A. Townend, National Coal Board, Mr. F. M. Birks, British Gas Council, Dr. H. Roxbee Cox, Ministry of Fuel and Power, and Dr. A. Parker, Department of Scientific and Industrial Research.

PHYSICAL SOCIETY EXHIBITION

THE Physical Society held its annual exhibition early this month at Imperial College, S.W.7, and again demonstrated the interest aroused in scientific instruments and apparatus. A number of firms closely connected with the gas industry were represented, and the following notes briefly describe their exhibits.

The **Automatic Coil Winder and Electrical Equipment Co., Ltd.,** displayed a number of outstanding exhibits, including the multi-range electronic testmeter described in our review of last year's exhibition. There was, too, an interesting heavy duty meter of the multi-range A.C./D.C. type, specially designed for use under difficult conditions where a robust portable instrument is required. Other exhibits included a high sensitivity avometer, a valve characteristic meter, and a fascinating resonance test set designed for use with a valve voltmeter and signal generator.

Bristol's Instrument Co., Ltd., was well represented, their exhibits including equipment of widely varying types. Among these may be mentioned a recording mechanical flow meter, a reset and proportional controller, a cycle resetter, and a thermometer and recording pressure gauge. Most interesting, however, was a working demonstration of an apparatus showing process lag and capacitances in control systems.

The **Cambridge Instrument Co., Ltd.,** limited their exhibits to one class of the wide range of instruments they manufacture, and selected a complete range of galvanometers and electrometers covering D.C. and A.C. measurements, comprising those with short or long periods, ballistic patterns, high or low frequency, astatic and electrostatic patterns, and instruments embodied in electronic valve circuits. Almost all of the 39 galvanometers exhibited were demonstrated.

W. Edwards & Co. (London), Ltd., concentrated their efforts, as last year, on high vacuum technique. Perhaps the outstanding exhibit was a Finch type electron diffraction camera working with a cold cathode electron gun. Other instruments on show included oil diffusion and rotary vacuum pumps (the latter being the well-known 'Speedivac' range), a vacuum controller, an electronic microammeter, and small vacuum coating plants.

Elliott Brothers (London), Ltd., displayed a number of interesting pieces of apparatus of various types. There was, for example, a magnetic amplifier counter, which was a magnetic amplifier version of the well-known photoelectric counters operating from interruption of light falling on a photocell; the equipment was designed for outdoor use. Also shown were a magnetic amplifier for photocell or strain gauge, a photoelectric curve follower, and a potentiometer recorder.

Evershed & Vignoles, Ltd., exhibited a new series of instruments, including insulation testers, insulation and continuity testers, earth testers and earthometers under the name of "Megger" testers Series 4. Also shown were a quick response Duplex recorder and an electro-pneumatic positioner relay.

The **Foster Instrument Co., Ltd.,** exhibited instruments of three types. Firstly, and perhaps most interesting, was an indicating automatic temperature controller of new design having the advantage of continuous operation, which results in the instant operation of the apparatus controlling the energy input to the furnace immediately any deviation from the present temperature occurs. The firm also showed a large scale resistance thermometer of new design with self-balancing features and having an unusually bold illuminated scale 55 in. long. It was designed for measuring air temperatures on the roof of a public building to give visible indication of such to the general public. A number of introscopes for inaccessible internal examinations completed the exhibit.

The **Department of Scientific and Industrial Research** was strongly represented by the Building Research Station, the National Physical Laboratory, the Chemical Research Laboratory, and the Fuel Research Station. The latter exhibited a magnificent model of the Calorimeter Building for domestic heating research, which was described in full in the *Journal* of July 7, 1948.

Griffin & Tatlock, Ltd., exhibited high efficiency fractional distillation apparatus with three types of still. Each column consisted of a boiler (a flask with means for electrical heating), reflux meter, packed column, column head, and distillate receiver.

George Kent, Ltd., concentrated on three principal types of apparatus. The first of these was a new self-balancing potentiometric recording or controlling instrument, which was an electronic version of the well-known Multelec, shown as a high speed D.C. instrument with continuous balance and full scale traverse of two seconds, giving about 10 times the speed of the standard galvanometer and mechanical relay type of instrument. Also shown were a high capacity fuel meter for aircraft, and an air-operated flow ratio controller.

The **Rotameter Manufacturing Co., Ltd.,** exhibited four models: A magnetic Rotameter, type 500; a pneumatic transmitting Rotameter, type 400; an electrical transmitting Rotameter, type 660; and a "taper rod" Rotameter. Also shown was a small air Rotameter fitted with a photoelectric device for giving a signal when the flow falls below a previously determined safe figure.

The **Telegraph Construction & Maintenance Co., Ltd.,** attracted a good deal of attention with its display of Telcon metals. These included H.C.R. alloy, oriented magnetic alloys, high permeability alloys, magnetic shunt alloys, Invar, glass sealing alloys, Telcuman, Beryllium copper, and various bimetals. A number of plastics were also shown.

INDUSTRIAL VISIT TO LEEDS

Photograph taken on the occasion of the visit of inspection of the Department of Fuel and Metallurgy, Leeds University, by members of the Industrial Gas Development Committee, following their meeting in Leeds on Mar. 29. Left to right: (Front row): A. C. Jennings (Sheffield Centre), Dr. J. E. Garside (Leeds University), Miss M. P. Brearley (Yorkshire Centre) R. F. Hayman (G.L.C.C. Centre), Miss L. Buckland (Industrial Gas Information Bureau), W. Dieterichs (Chairman, Industrial Gas Centres Committee), A. Higgs (Engineer, Manager and Secretary, Yorkshire Centre), Professor A. L. Roberts (Livesey Professor, Leeds University), J. Wood (Leeds University), Dr. J. Blackburn (Leeds University). (Back row): A. J. Skinner (South Metropolitan Centre), R. W. Deans (Yorkshire Centre), K. M. Ernest (Cardiff Centre), F. W. Howell (Manchester Centre), H. P. Lupton (Liverpool Centre), H. R. Hems (Birmingham Centre), R. Workman (Yorkshire Centre).

COMMEMORATION DINNER AT DUMBARTON

LONG RECORD OF PUBLIC SERVICE

ON April 17, on the invitation of the Provost, Magistrates, and Town Council of Dumbarton, a dinner was held in the Council Chamber of the Municipal Buildings, 'to commemorate the transfer of the gas undertaking to the Scottish Gas Board.' Provost Harry H. Brown, J.P., presided, and the chief guests were Mr. D. D. Burns, Deputy Chairman of the Scottish Gas Board; Mr. David Fulton, Helensburgh, part-time member of the Board; and Bailie Charles Murdoch, J.P., member of the Board.

Mr. **David Fulton** proposed the toast of the Dumbarton Gas Undertaking. The toast, he said, might well be based on the text 'Let us now praise famous men,' because the story of the rise of any successful undertaking was the story of the men who began it and who made it. The Gas Light and Coke Company was formed in 1812 and it was some 20 years after that some citizens of Dumbarton held a meeting and formed the Dumbarton Gas Company, which remained in existence for a period of 41 years. In 1873 the Corporation decided to purchase the undertaking, and they appointed Mr. James M'Gilchrist as Manager. Mr. Joseph M'Geachin followed, and under his charge the gasworks progressed steadily. When he left the works in 1917, Mr. James Bell, from Kirkintilloch, was appointed. Mr. Bell retired in 1939 and Mr. E. G. Smith succeeded him. The present Manager, Mr. A. M'Fadyen, was appointed in 1943. The output of the works was now in the region of 500 mill. cu.ft. per annum and the price among the lowest in the country. A scheme had been accepted for the installation at the works of a carbonising plant to increase the output by a further 6 mill. cu.ft. per day. The works capacity was to be trebled and would provide a bulk supply to Helensburgh.

Bailie **Vincent Hanna,** who replied to the toast, said that as a member of the Gas Committee for the past 17 years he had seen at closest quarters the growth of the undertaking. As a Town Council they were proud of their records and achievements, and more than proud of their gas undertaking as a whole and of the place it had achieved in the industry.

Reasons for Success

Mr. **Alexander M'Fadyen,** Engineer and Manager of the Dumbarton undertaking, also replied to the toast. He joined the Department direct from school, and in passing through the various grades to his present position had been fortunate to witness an expansion of the undertaking to four times the output in 1923. What, he asked, were the main reasons why the Dumbarton organisation had been so successful? When the late Mr. James Bell came to Dumbarton, as Manager, and after being only two years in that position, he told the Town Council that they required new works, and it was to the credit of the Council that they agreed so readily to such a bold suggestion. The site was chosen and the new works erected in such a manner that extension from that date was made comparatively simple. It was interesting to note that the land available at the site today was sufficient to enable them, if required, to extend to 10 times their present capacity, and, indeed, they were on the eve of commencing work on extension planned and ordered two years ago, which, when complete, would alone quadruple their present output. After paying tribute to ex-Provost A. M. Macphie and to Mr. Fergus Roberts, ex-Town Clerk, for the encouragement given to him, said that support had been continued by Provost Brown and his Committee. After thanking his staff for their willing assistance, Mr. M'Fadyen said to the Town Council that after vesting day they in the Gas Department would continue with one aim—to serve to the best of their ability the consumers within the area.

Provost **H. H. Brown** proposed the toast of 'The Scottish Gas Board.' The Scottish gas industry, he said, was the third basic fuel and power industry to be brought under public ownership. The fundamental objective of the Board must be the best possible supply of gas to consumers in the area and at the lowest price, but that must be consistent with the Board's obligations as good employers. He had been greatly interested to learn that it was the intention to avoid large and costly central organisations, which might easily become out of touch with the consumers and so lose the very valuable personal contact that had been one of the industry's strongest points in the past. It was all to the good that the local manager should be allowed to get on with the major task of supplying gas at an economic price, backed by first-class service whether to industrial consumers or otherwise. Nothing but good, and a feeling of confidence could arise as a result of the general tendency to carry out the policy of decentralisation from high level to low level. The protection of the consumer was of vital importance and it was gratifying to know that the Consultative Councils which would be the watch-dogs of the public would be adequately represented by members of the local authorities. The industry was prosperous, progressive, and in good heart. The opportunities under nationalisation were manifold and, given wise guidance from the Board, there was no reason why it should not go forward from strength to strength.

Mr. **D. D. Burns,** Deputy Chairman of the Scottish Gas Board, replying to the toast, said that when he was a very near neighbour, in Glasgow, he had had ample opportunity of seeing with what efficiency the Dumbarton gas undertaking was administered. He only hoped that the Gas Board would carry on through the length and breadth of the area they were called upon to administer the high standard that had already been set in Dumbarton. The Scottish Gas Board had been charged with the administration of 192 undertakings, 64 locally owned and 128 under company ownership. There were gas undertakings in Stornoway, in Orkney, in the Shetland Islands, in Wigtown and Stranraer. There they had the geographical problem. They would have a tremendous administration problem—obviously the administration which would suit Glasgow and every big city would not work in the smaller towns. In the Board's approach to this administration problem they felt that over-centralisation must be avoided at all costs; they felt that local contacts must be maintained; that the gas consumer in a particular locality must have a person to whom he looked for the continuance of his gas supply and service. As a Board they had decided that the functions formerly carried out by local gas managers would still stay with them. They would be responsible for their locality. They had appointed Divisional Controllers and Group Managers, but, so far as they were concerned, the Board regarded their functions as purely supervisory. As big brothers, they would give advice to smaller brothers and lend to them the larger resources of the larger undertakings. The whole conception of the scheme was one of decentralisation. So far as the Board and Headquarters staff were concerned, in due course they hoped merely to concern themselves with policy and organisation. The Board would preach the doctrine of cheap gas with good service and leave it to the local officials to carry out their policy in the districts. Another aid to this question of local contact were the Gas Consultative Councils which were being set up under the Act.

The toast of the guests was proposed by Mr. **John Campbell,** Hon. Treasurer, Dumbarton Town Council, and reply was made by Mr. **Athol W. Brown,** Engineer and Manager, Alloa, Secretary of the North British Association of Gas Managers.

CHANGE OF FUEL POLICY

Speaking at the annual dinner of the Yorkshire section of the Institute of Fuel in Leeds on April 9, Mr. Hugh Gaitskell, the Minister of Fuel and Power, said that the fuel situation was such that he had now to advise domestic consumers, in particular, to use electricity during the summer months and save the solid fuel for the winter. Declaring this advice to be different from that which he had given earlier, he said the position was that there was a continuing shortage of large coal, anthracite and graded coal, which might last for one or two years. The position regarding the supply of small coal, used mainly by power stations and industry, was much easier. Consequently it was essential that both domestic and industrial consumers should adjust themselves to the situation until the shortage of plant could be overcome. Not only was there insufficient electricity generating plant to meet an unrestricted peak demand in winter, there was also a prospect of possible shortages of gas in the winter in those places where the demand had expanded beyond the capacity of the local gas undertaking. He expressed his conviction that the shortage of plant would be overcome as the great investment programme, into which so much of our resources had gone, was completed.

The meeting was presided over by Dr. D. T. A. Townend, President of the Institute of Fuel, and among those present were Mr. H. S. Vick, Deputy Lord Mayor of Leeds, Mr. W. M. Lapper, Chairman of the Yorkshire Electricity Board, and Dr. R. S. Edwards, Chairman of the North Eastern Gas Board.

The Manchester District Association of Gas Engineers holds its 79th annual general meeting at the Grand Hotel, Manchester, on April 22, at 2 p.m. Following the ordinary business, Mr. James MacLusky will induct Mr. John D. Ashworth (Blackburn) as his successor in the Presidential chair, and Mr. Ashworth will deliver his Presidential Address. The meeting will be preceded by a luncheon at 12.15 for 12.30 p.m.

PREPARATION AND EXAMINATION OF GASFITTERS UNDER A REGIONAL CLASSIFICATION SCHEME*

By J. L. WILSON, M.INST.GAS E., M.INST.B.E.,
District Engineer, Watford and St. Albans Gas Company

THE Classification Scheme provides for agreed qualifications, rates of pay and working conditions for apprentices and gasfitters engaged wholly or mainly on district work and employed by undertakings within the Scheme. An apprentice is deemed to be a youth not less than 16 years of age and his period of apprenticeship five years, four years of which are spent assisting gasfitters, and in his fifth year he may be allowed to execute small single-handed fitting work. Gasfitters are divided into three grades, Grade 1, 2 and 3, Grade 1 being that of highest proficiency.

Normally before a man can qualify for classification in any of these grades or transfer from one grade to another, he must have passed the appropriation examination consisting of three parts, written, oral, and practical. An apprentice is expected to sit for his third grade examination during the last six months of his apprenticeship and if he passes, becomes a Grade 3 fitter on completion of five years service in the gas industry. After serving a further two years he may sit for the Grade 2 examination and if successful, another two years' service qualifies him to sit for the Grade 1 examination. In all a total of nine years must be served under normal conditions to enable a youth of 16 to become a fully qualified gasfitter.

This is a stringent requirement for a craftsman and in consequence, as is to be expected, the standard of knowledge required is high.

City and Guilds of London Institute Certificates in Gasfitting exempt holders from the appropriate grade written examination only; there are no examinations outside the scheme which carry exemption from the practical examinations.

A Grade 3 man should be qualified to do the bulk of the normal day to day work on the district including the servicing of most types of domestic appliances. He should be able to undertake new internal installation pipework and rectification of any faults in existing internal installations, fix meters, cookers, wash boilers and space heaters under normal conditions of fixing. A further point of some importance, he must be able to read a meter correctly and compute the consumption in therms from two meter readings, also carry out the simple clerical work of the routine day to day records required of a gasfitter.

The knowledge required by a Grade 2 man is more comprehensive and his skill in the work of a Grade 3 man should be tempered and polished by experience, in addition he should have a fair knowledge of water heating systems and be used to working with tube up to 2 in. nominal internal diameter. The working of lead pipe of water weight and wiping of plumbers' joints is a further requirement.

A Grade 1 gasfitter is required to be capable of installing, adjusting and servicing any type of gas-consuming apparatus including industrial equipment, for high or low pressure gas or using high pressure air; he must have an adequate knowledge of gas and solid fuel fired central heating equipment to enable him to undertake an installation of either type satisfactorily.

From the foregoing it will be seen that the degree of qualification is naturally progressive and at Grade 3 stage a man is expected to have a sound basic knowledge of his trade, the subsequent skill necessary to qualified as a 2nd and finally a 1st Grade man being dependent to a major degree upon practice and experience to be gained on the district.

Preparation

Preparation of a gasfitter for his examinations naturally falls under three distinct but closely related sections:—

1. Day to day work on the district.
2. Spare time tuition.
3. Courses of training during normal working hours and refresher courses.

Day to day work on the District.

In my opinion this is the most important aspect of a gasfitter's training and while the other sections enumerated are essential, complementary and closely related, it is the training and experience which a youth and subsequently a man obtains upon the district which decides whether or not a gasfitter is to be a good craftsman.

The preparation of a youth for his subsequent Classification Examinations begins in his first days of service with an undertaking. Examinations in the region concerned are new and it must be impressed upon every youth that examinations are essential and a normal and fair way of assessing the effectiveness of his training and diligence. He must appreciate that the acquisition of his Third Grade Certificate is to be the aim of his first five years in the Industry and that with a view to becoming a First Grade fitter in the minimum period. The attitude that with a reasonable amount of luck he will scrape through his Third Grade examination must be discouraged because, as previously stated, a youth is expected to gain the greater part of his basic knowledge prior to becoming a Third Grade fitter.

With this end in view the undertaking must do its part to engender the right approach to Classification Examinations by providing a prospective gasfitter with sources of information and the practice which he will require. In most undertakings a youth is normally placed with a skilled gasfitter, to assist him to learn his trade in the normal way of an apprentice. Probably the first thing a youngster will be called upon to do will be to handle the fitter's tools and here is a point where the undertaking might contribute considerably by ensuring that each qualified fitter is provided with a comprehensive kit of good tools of which a craftsman may be proud and thereby cultivate an early appreciation of the value of tools. My Company provides all fitters with a full complement of tools and in addition there are special tools available on loan when required from the district workshops.

Where the system of putting an apprentice with a qualified fitter is adopted, the youth often remains with the same fitter throughout the major part of his apprenticeship, but I have no hesitation in saying that I consider this to be wrong and that there should be circulation of apprentices so that they have an opportunity of working with different types of men and in consequence obtain a very much more varied experience.

The necessity for varied types of work does not stop at the apprentice but applies equally to Grade 3 and Grade 2 fitters. Many instances have come to my notice of men presenting themselves for examination without having had the opportunity of undertaking work applicable to the grade of the examination being undertaken and while no doubt it is easier for the district foreman, from the point of view of supervision, to issue particular types of work to selected men who he knows can undertake the work satisfactorily, this is a very short-sighted outlook. If the lower grade fitters are not able to obtain the necessary experience in the high grade work a time will come when the foreman concerned will be without the key men on whom he has placed his reliance and the satisfactory execution of high grade work without heavy supervision will become increasingly difficult. A man must be given opportunity to undertake work applicable to the next highest grade and so obtain by practice the confidence and experience vitally necessary before the finer points of finish and workmanship can be obtained. The final results of an installation depend so much on the initial approach and a correct perception of how the work is to appear when finished, even before the first pipe is fixed, and this appreciation is a major result of experience.

It is a problem to ensure that Grade 2 men acquire knowledge of industrial installations and appliances to satisfy the conditions of Grade 1 Examinations. In my Company industrial work in all its aspects is administered by a separate department under the Industrial Gas Engineer. This department has its own fitting staff and functions as a unit independent of the district department though naturally close liaison is maintained between the two. There are occasions when district gasfitters are transferred to the industrial department to meet peak demands, but this in itself is insufficient to ensure that district gasfitters obtain industrial experience and in consequence, after passing the Second Grade examinations, they are given the opportunity of temporary transfer to the industrial department for a period of not less than six months to gain this special experience. If the circumstance of the work in each department permits, this period of

* From a paper presented to the Southern Association of Gas Engineers and Managers (Eastern District), March 29.

transfer is extended, as it is appreciated that only the minimum experience of industrial installations can be obtained in six months.

Spare-time Tuition.

Work on the district under a skilled man provides the necessary element of experience and practice and as such is invaluable but in the case of a youth it is now that the bulk of his basic instruction should be received while he is comparatively fresh from school and his mind is receptive. With this in view, all our apprentices are called upon to attend evening courses of instruction in gasfitting up to the final standard of the City and Guilds of London Institute. The courses are arranged in conjunction with the local education authority; theoretical classes are held at the Technical Institutes while practical training takes place at our training centre, the same instructor taking both classes to ensure complete co-ordination. The evening courses involve attendances on two evenings per week from 7 to 9.15 p.m., and do not prevent an apprentice participating in other activities of youth such as youth clubs, cadet units and the like, which provide a useful outlet for youthful exuberance. Expenses for these evening courses, including travelling expenses where the centre is some distance away from the youth's home, are paid by the Company, subject to satisfactory attendance.

Many of the younger fitters whose training has been interrupted by war service, attend these evening classes alongside apprentices many years their junior, but this does not appeal to all. They dislike working alongside apprentices and require tuition of a more intensive nature. To meet these cases an experimental course of evening instruction was arranged at our training centre where prospective candidates for examination could obtain intensive instruction in any part of their work which they felt to be weak.

Courses of Training during Normal Working Hours and Refresher Courses.

I consider the foregoing to be the bare minimum of training which an apprentice may expect; in particular no account is taken of general education which among other benefits enables a future fitter to present a reasonably understandable and grammatically correct report. It is particularly noticeable that young people whose education has been rather more scanty than usual during the war years are deplorably lacking in general education. Considerable good can be done by the day continuation school movement and our apprentices between the ages of sixteen and eighteen must attend a day continuation school one day per week, where general studies such as elementary mathematics, English, literature and social subjects are undertaken. It is hoped in the near future to introduce a regular system of day-time gasfitting instruction for apprentices with particular reference to apparatus, which I feel is not fully covered in the City and Guilds of London Institute syllabus.

Immediately before each series of examinations all candidates attend a refresher course of at least one working week's duration in the work appropriate to the grade of the examination. These refresher courses are of an intensive nature and their purpose is to give that extra degree of polish to a man's knowledge and work necessary for examination; in no way are they intended to be 'cramming' courses to enable a man to scrape through the examination, but they serve to round off his training and experience in that grade and give him confidence to approach the examination in the right attitude of mind without undue nervousness.

Organisation of Examinations

The examinations are held in the Autumn and Spring of each year, as far as possible in October and April and, as stated previously, are divided into three sections, (1) Written, (2) Oral and (3) Practical.

At each centre an examination panel consisting of a chairman and two other members is appointed to arrange and supervise the examinations. The Chairman is an official of the undertaking operating the centre and the other two members are appointed by the Examination Sub-Committee of the Regional Gas Industrial Council to represent the employers and the men respectively. It is usual for the employers' representative to be an instructor, district foreman, or a senior inspector who is highly skilled in the practical work of gasfitting, while the men's representative is usually a union official or member chosen for his knowledge of the actual work of gasfitting.

1. *Written Examination.*

Papers for this examination are prepared centrally for the whole of the region by the Examination Sub-Committee of the Regional Gas Industrial Council and for obvious reasons the written examination takes place on the same date, at the same time throughout the region.

In order to ensure suitable accommodation being available it is the custom for the examination to take place on a Saturday afternoon. At the Watford Centre we are fortunate in having available a large demonstration hall for the written examination which enables adequate space to be at our disposal in congenial surroundings.

Candidates are instructed to present themselves no later than 1.45 p.m. on the afternoon of the examination so that the papers may be handed out and the examination commenced promptly at 2 p.m. and terminated at 5 p.m. The sealed packet of papers is opened and the distribution of the papers commences at 1.55 p.m.; each candidate hands in the card bearing his name, undertaking and grade of examination which was given to him when he entered the examination room, in exchange for the examination paper. This enables an accurate check to be kept to ensure that each candidate receives one paper only and avoids the necessity for calling a roll. During the examination the examination panel are present and assist with the invigilation, although one or more invigilators are provided by my Company.

Smoking is permitted as I consider this tends to reduce the tension and assist a candidate in his approach to an unaccustomed task.

2. *Oral Examinations.*

The oral examination appears to have more nervous influence on candidates than either of the other sections and with this in mind it is necessary to provide conditions which minimise the effect. The duration of this examination is 15 minutes in the case of Grades 2 and 3 and 30 minutes in the case of Grade 1; these are minimum periods as it is seldom possible to assess a man's experience and knowledge in the time stated. In the first instance the oral examinations at the Watford Centre were held in an enclosure within the main practical examination workshop to allow the minimum disturbance of the practical examination while candidates were undergoing their oral questioning, but under certain circumstances this can be trying both to the candidate and to the panel of examiners due to the noise occasioned by the practical examinations. Now a separate room is used in premises adjacent to the examination centre and candidates are taken singly from the practical examinations in the case of Grades 2 and 3, and have their oral examination in more congenial surroundings away from the atmosphere of the workshop.

The questions are prepared by the examination panel after consideration of the written paper and a selected list of 20 questions or so for each grade is agreed; thus it is possible to give each candidate a varied selection and at the same time vary the questions asked at each session. I consider that it is insufficient to ask a candidate a bare question and assess his ability on the direct answers given; the questions are used mainly as a basis for discussion on a particular aspect of the work and subsequent ancillary questions asked during the discussion enable the panel to enlarge on apparent weaknesses and thereby obtain a true picture of the man's ability. The policy of undertakings varies so considerably that hard and fast questions with set answers would operate unfairly to the candidates and the undertakings and would in no way serve to indicate the true skill and knowledge of a candidate. It is a considerable help to utilise sectioned specimens such as governors and valves where applicable.

Marks are awarded for each question and the results and remarks entered by each member of the panel on the form provided for the purpose; the final mark awarded to the candidate is the average of the three marks awarded by the members of the panel. It is an advantage to award 8 or 10 marks to each question and then reduce the final figure proportionately to the 20 stipulated for this examination, thereby permitting greater flexibility in marking.

3. *Practical Examinations.*

The practical examinations vary in duration, Grades 2 and 3 being for a period of 3 hours sub-divided into 2½ hours' practical work, ¼ hour appliance adjustment test and ¼-hour oral examination; the Grade 1 examination is a for a period of 7 hours, 6½ hours' practical work and ½-hour appliance adjustment test. These examinations take place at my Company's Training Centre. The Centre is designed to provide accommodation for rehabilitation training for men returning from H.M. Forces together with refresher courses for established fitters and the training of fitter apprentices.

The maximum number of candidates examined in Grades 2 and 3 is six per day, the examination taking place in the morning only, and in the case of Grade 1, four per day, the examination covering the whole of one day. It will be appreciated that under these conditions each candidate has ample space in which to work.

The tests for all grades of fitters should consist of work closely related to that expected of the particular grade of fitter concerned. The preparation of set pieces to drawings or written dimensions does not give sufficient indication of a man's capabilities on the district; accordingly all tests are based on the work the particular grade of candidate would be expected to undertake on consumers' premises and the conditions are reproduced as closely as possible. Due to the nature of the construction of the centre it is not possible to utilise the walls for fixing appliances and accordingly the only part of the actual structure where appliances may be fixed is the brick wall down the middle of the building. In consequence considerable use is made of wooden topped benches utilised either in a horizontal or vertical plane to provide suitable mountings for appliances and pipework

for the tests; in this respect these benches, being portable and capable of re-arrangement in many ways, provide unlimited scope for a varied layout for all grades of examinations.

Grade 3

Dealing with Grade 3 candidates, it has been our practice to arrange the actual fixing of a cooker or gas fire in association with a meter but as the time available is limited, a portion of work is carried out prior to the examination when the centre is being prepared, so that the candidate is left with only sufficient work to undertake in the time allowed, but in all cases it is typical of the circumstances he would meet on the district. For instance in the case of the meter and fire test, the meter is provided with an inlet connected to a live float rail and the candidate is expected to provide an outlet from the meter to a portion of tube work to represent the internal pipe installation of the premises and on the termination of this pipework provide a ½ in. copper tube connection to a gas fire, suitable obstructions in the form of a dummy curb being introduced into the pipe run, while the fire and meter are so arranged that the requisite amount of skill must be available to complete a sound installation in accordance with good practice and having a satisfactory appearance. The installation must be left gas-tight by the candidate and the fire adjusted as would be the case on a consumer's premises.

The appliance adjustment test in this case would constitute the adjustment of a cooker which had previously been maladjusted and otherwise interfered with to produce conditions as close as possible to those which would be the cause of a cooker complaint from a consumer.

Various alternatives within the limitations of the examination schedule for this grade are possible without much alteration of the basic arrangements but in comparatively simple tests such as are required for this grade, it is essential to provide variation in types of appliances and in some instances dimensions, to minimise the effect of one candidate copying the work of the man on the next bench. Instances have been noted where a candidate is quick to commence his work, other candidates follow on the same lines, assuming that he must be particularly skilled, only to find that as the work progresses, they have repeated the faults of the first candidate, who could well have given a little longer to his consideration of how the work was to be done before he commenced.

Grade 2

In the case of Grade 2 Examinations, emphasis is on water heating and in general a test has as a basis the fixing of a water heater complete with gas and water connections, here again it is necessary for some of the work to be undertaken prior to the examination and the candidate is confronted with an installation partially completed which he must finish in accordance with his own ideas, and it is most important in preparing these tests that no indication is given by the work done prior to the examination of the manner in which it is expected the installation will be finished. Due to the necessity of providing waste facilities in connection with water heaters, the test is undertaken on heaters specially fixed to the brick wall provided down the middle of the Training Centre. Identical appliances are provided as far as is possible for each candidate and the ancillary connections so arranged that in each case the amount of work involved is similar, though preferably not to the same dimensions. Limitations on the number and type of appliances available in the past has tended to minimise the variety which could be introduced into this particular test, but the variation of the position of connections on particular makers' appliances reduces the amount of actual repetition. The appliances fixed by the candidates must be left in a sound and adjusted condition by the candidate and the panel expect to be given the advice which would be given to a consumer after completing the fixing to ensure satisfactory operation in service.

The adjustment test is undertaken on separately installed water heaters, often of the sink water heater class, which have had defects arranged so as to simulate district conditions. Experience has proved that it is not wise to arrange defects on the appliances installed by the candidates, as this can be misleading and interfere with the true aspect of the installation test. It is far better to provide a separate appliance for the adjustment test.

With this type of test the question of candidates copying each other's work again is important, despite dimensional variations, and it is helpful if each candidate is made to prepare a list of material he considers he requires prior to beginning the work. A form is provided for this purpose and the candidate hands this to an invigilator in exchange for the material required, any subsequent material required is noted by the invigilator on the form and consideration of this information enables the panel to assess the candidate's initiative and approach to the layout of the work in hand.

Grade 1

The tests for this grade are the most difficult and need much careful preparation. Suitable appliances and installations are seldom available on which to base the work; in consequence resort has to be made to dummy models of appliances such as central heating boilers and specially constructed demonstration sets of boiler controls on which the candidate may demonstrate his knowledge of the function and adjustment of such controls. It has been the practice to divide the examination period into two distinct sections, namely, morning and afternoon, with separate examination papers for each period. The morning's work is devoted to appliance fixing and here full use is made of the benches to represent walls. The task has taken the form of installing the flow and return connections to a small central heating boiler or circulator complete with safety valve and draw-off tap between fixed points representing the flow and return connections to the hot storage tank and the appliance, either actual or in the form of a dummy provided with tapped flanges to represent connections; suitable obstructions are provided to ensure that the candidate has to set his pipes and the layout is arranged so that the man must be capable of duplicating the set in his original pipe to ensure that the flow and return are parallel throughout their length. To undertake this test satisfactorily the finer points of craftsmanship in connection with pipe manipulation must be understood and the man must foresee the finished installation before he commences work, as here again he must requisition all the materials he requires prior to commencing and a close watch is kept on additional material he may require.

For the second half of the examination emphasis is placed on work with the larger sizes of steel and lead piping and it has been found convenient to utilise the partial fixing of a large meter for this test. No guidance is given to the candidates as to how the connections must be made, each man is provided with a fixed portion of pipe work representing the service or internal installation to which the meter must be connected, and he must use his initiative and devise his own layout. Special consideration is given when assessing the work to the manner in which the connections are arranged, especially compactness and facilities for maintenance and exchange of the meter.

It may be argued that this type of test could well have taken the form of bench work involving the preparation of specimen pieces to dimensions or sketch, but I am of the opinion that it is easier for a man to produce such specimen pieces with less practical ability than if he had to make the actual connection as outlined above. On the other hand it may be said that the test should involve the complete fixing of a particular meter or large gas-consuming appliance, but in most cases such a task would involve considerable repetition of work such as cutting and screwing the larger sizes of steel tubing which introduces a test of physical strength rather than craftsmanship, despite the fact that mates are provided for this grade of examination. If the portion of the work to be undertaken by the candidate is chosen carefully so as to involve the finer points of craftsmanship, a full assessment can be made of the man's ability.

Briefly the aim throughout the examinations is to leave the candidate to do only the more difficult and vital points of an installation.

Tests of the candidate's ability and knowledge in connection with industrial controls are assessed from his work on demonstration sets. The purpose of one such set is to demonstrate the automatic temperature controls and safety devices on a central heating boiler. A small water tank approximately 18 in. long by 12 in. wide by 12 in. deep. arranged on a fabricated mild steel stand, has twin-tube burner fitted with Bray jets mounted underneath and in the gas supply pipe to this burner are fitted a relay valve and pilotstat cut-off valve. A heat detector is fitted towards the top of the tank and a permanent by-pass to the burner is provided. The controls are connected by means of copper tubing as would be the case in a normal boiler installation, the tubes being colour coded to assist in identification. The demonstration set is connected to gas and filled with cold water for each candidate who is expected to adjust the controls so as to maintain a given water temperature and then explain the function and operation of the various controls to the examination panel. Numerous such demonstration sets can be constructed to illustrate all types of industrial controls and in addition to their use as a means of assessing a candidate's knowledge in this sphere, they have considerable value in training.

Conclusion

Even with the greatest care in organisation and the maximum effort to ensure the most scrupulous fairness to all grades of candidates, there are bound to be those who disagree on principle with examinations, the way they are conducted, and everything appertaining to grading by means of proficiency tests. For the majority the examinations are taken in the true perspective and even though candidates may have to come forward for examination on more than one occasion it is gratifying to see their standard of skill improve on subsequent attempts, clearly indicating they have acquired further training and knowledge which might not have been the case if examinations had not to be passed. In general the standard of craftsmanship in the area shows signs of a slight improvement.

Considerable time has to be devoted to these examinations, but now it would appear that the flow of candidates is reaching

a more normal level and this, coupled with the improvement in training facilities and consequent reduction in the number of repeat entries, should relieve the burden imposed on centres. The flow of examination candidates through a centre provides an indication of the advancing skill of gasfitters within the region and I would deplore any falling-off in this respect; it is my opinion that the industry as a whole depends more and more on a high degree of skill coupled with good personality on the part of its gasfitters to maintain an efficient service to consumers, for basically the gasfitter is our most frequent and valued contact with consumers, who judge the service efforts of an undertaking by the manner in which the gasfitter carries out his duties.

DISCUSSION

The **Chairman** (Mr. W. K. Tate, Portsmouth) thought the Watford Company was to be congratulated on the attempt it made to inculcate the examination atmosphere into the candidates before they took their tests. That was important when dealing with men who had probably never taken a really serious examination in their lives; their nervousness was very real and precluded the examiners in the oral and practical, as well as the written tests, from finding out what the men knew, and any step they could take to put the men at ease was very desirable. He was glad to know that Mr. Wilson supported the Examination Sub-Committee in relating the practical part of the examination to district work. There was a considerable body of opinion in the area of the Association which felt that the Grade 3 examination was not necessary, and that when a man had served his five years' apprenticeship he should have achieved sufficient knowledge to permit him to go forward to the Grade 2 examination. Personally he did not share that view, as a substantial percentage of the candidates failed at the first attempt. There was a real need for the Grade 3 examination, and he was glad that Mr. Wilson thought so too.

Mr. **T. C. Battersby** (Watford and St. Albans) said the paper described the examination scheme of the Southern Regional Council, and he congratulated the Chairman and his Committee on the enormous work they had done in preparing the syllabus for the training of young gasfitters. Undertakings having accepted the Classification Scheme had a duty and responsibility towards their apprentices to see that there were available facilities for the training required to enable them to pass these examinations. It was the concern of the industry to attract the right type of youth, and it should be made clear to that youth that his training was planned in a proper sequence and was not the hit and miss affair which he was afraid it had been understood to be on many occasions in the past. The Watford Company had devoted considerable time and thought to the training of apprentices. They could not claim to be pioneers, nor that they had found answers to all the problems, but they did feel that it was essential to plan the apprenticeship over the five years so that in the early years the period of training should be supported by regular attendance at day continuation schools. They also encouraged their juniors to attend evening classes.

Consumer Contacts

The apprentices must be encouraged to regard the examinations not as a series of hurdles strategically imposed to make life more difficult for them, but as a means of putting the hall mark on their skill and ability. It had been said that there was a field marshal's baton in every soldier's knapsack; he thought they must encourage the apprentice to speculate on the contents of his tool bag. The author in his concluding remarks reminded them that the fitter was their most frequent and valued contact with consumers, who judged the service efforts of the undertaking by the manner in which the fitter carried out his duties. That was axiomatic. Nothing was more gratifying to an official than to hear from a consumer that work had been carried out satisfactorily on his premises, and when such compliments came along it was not sufficient to say they were pleased to hear them; they should be made known to the man concerned.

While supporting the examination scheme whole-heartedly he felt there were difficulties. He questioned whether there was an adquate flow of young people into the industry; had they sufficient skilled personnel? If not, then there were the difficulties involved in recruiting labour from outside sources and paying the men what they regarded as an adequate wage. It had been the practice in many undertakings during the period of peak demand to recruit men from the plumbing industry—men who could do an extremely good job of work—but owing to the limitations and restrictions imposed by this scheme an undertaking was precluded from drawing on that source. He hoped it might be possible for the Examination Committee to devise some way out of the difficulty. It was not a difficulty that was common to every undertaking, but it was a real problem for those undertakings which were expanding rapidly but which could not afford the personnel for the training of apprentices and could not attract men from areas outside the Southern Regional Classification Scheme. That was a matter that must be considered in the light of the examination scheme in general. He congratulated Mr. Wilson on the preparation of the paper, because he knew that the training of apprentices was a matter very near to his heart.

The London Scheme

Lieut.-Colonel **J. A. Gould** (South Suburban) said he took it that the grades referred to in the paper, Grades 1, 2, and 3, were equivalent to the similar grades A, B, and C of the London Gasfitters' Classification Scheme. He noted that to progress from one grade to another a man had to pass practical, written, and oral examinations in each case. In the London scheme the oral examination was required only in respect of Grade B, which was considered the most comprehensive test of the candidates' general ability as a gasfitter. He was interested in the period of time allotted to examinations, as those times appeared to be of shorter duration than those in the London scheme. The London arrangements allowed for a one-day examination in respect of the Grade C candidate and for two day examinations in respect of Grades B and A. The London written examinations in respect of Grades B and C (corresponding to Grades 2 and 3) were short, occupying about a half to three-quarters of an hour, whereas the Grade A paper involved about four hours. The chief difference between the regional arrangements was found in comparing the practical tests, the London Grade A occupying about eight hours, Grade B 10 to 11 hours, and Grade C five to six hours, compared with the Watford times of seven, two and three quarter, and two and three quarter hours respectively.

The period of 30 to 45 minutes for the oral examination in respect of Grade 1 seemed to him to be long and exacting, and he would be interested to know the type of question asked. Although in the London scheme there was no Grade A oral examination, the candidate had to pass a test in which he had to detect errors in the fitting work of an installation, appliances, and the setting of controls. He asked if the author had considered the use of separate cubicles in which the practical installation work could be carried out by the examinee, the conditions simulating those to be found in the room of a house. His Company had always employed such cubicles in respect of practical tests ever since 1935. He suggested that their use would reduce the possibility of candidates copying each other's work, of which the author complained, and would be much more satisfactory than adapting the benches for mounting appliances.

Work on the District

With regard to the Grade 1 test, he could not find any reference to the requirement that a candidate must be vouched for by a certificate or otherwise from his company, to the effect that he had satisfactorily carried out work on the district to a high standard and in a first class manner. Would not the author consider such a requirement desirable, particularly having in mind that it was from the Grade 1 men that foremen and possibly representatives were recruited? In connection with the written examinations, he asked if the author could say whether there were any arrangements for the assessment of the scripts.

He was pleased to note that the Watford Company arranged a special course for their older fitters. They were very pleased when in 1943 they had an enquiry in his own Company from a number of the older fitters who had received their training before technical education was so generally available, as to whether arrangements could be made for them to take the City and Guilds Final Examination. The local education authorities were most willing to co-operate with them, as were the City and Guilds of London Institute. Their own foremen gave the instruction and they were pleased when out of the 11 who took the examination eight passed. From time to time since then they had arranged special short refresher courses for the older men.

A Common Examination

Mr. **R. N. LeFevre** (Gas Light and Coke Company) said he was full of admiration for the way Mr. Wilson and his colleagues in the Southern Region had surmounted the very considerable geographical disadvantages of running the scheme. He wondered whether the seven or eight examination centres that existed now in the Southern Region all worked on a common examination, so that fitters in any of the Grades 1, 2, or 3 were mutually interchangeable. When the Classification Scheme was started in the London area they tried having four centres, but the scheme did not work and they were forced to have a common centre. Of course in the Greater London area travelling was relatively easy and they could do that with success. Eventually he supposed the whole idea was to have gasfitters in every part of the country who had a definite standard of training and capability. There were slight differences between the London scheme and the Southern scheme, but when they went further afield, into the Midlands and the North, they found there were considerable differences in the capabilities of fitters. He felt that at 15 an apprentice gasfitter was too young to work in consumers' houses. For many years they had found it preferable to have such boys for two years in a training school before they went on the district. They had also arranged that a boy was passed from one type of fitter to another, and thus through various stages of work, and

they had recently come to the conclusion that after six years' apprenticeship a lad was either a gasfitter or he was not, and if he was not, it did not speak very well for his six years of training. He felt something should be done to cut the courses a little shorter, for nine years to make a gasfitter was too long. Reference had been made to the time devoted to the examinations. In London the times were two days, two days, and one day for the three grades, which appeared to be twice those of the Watford scheme, but it must be remembered that they did not work a full day at the London centre. Allowances were made for travelling in both directions, and the actual number of examination hours was not greatly in excess of those at Watford. It would be interesting to know how the examinations compared with those in other centres; in other words, would an apprentice from, say, Rochester, or Reading, or Uxbridge, be acceptable at Watford, or vice-versa.

Mr. **W. M. Paterson** (Brighton) said the Brighton centre had been in operation for the last three examinations, and they had considerable help from Portsmouth. He had always had misgivings as to the practical work being left to the panels, but he was pleased to see that their work was more or less standardised. On the question of co-ordination it would not be difficult for representatives from the panels to meet before the examinations to arrive at a common basis. Figures of passes and failures of fitters who had been to the City and Guilds classes and those who had not showed that of those who had already got the City and Guilds certificate and were therefore exempt from the written examination, 30 passed and 10 failed, and among those who had not taken the organised classes, seven passed and six failed. Nevertheless, some of the men who had not taken the City and Guilds courses were fairly experienced on the district. The oral examination was undoubtedly a severe test for some fitters who were nervous. At Brighton they tried to put them at their ease, and in his view it did not take long to assess a man's knowledge by asking him a number of questions and discussing things with him, and cross-examining him on the points in which he was weak.

Mr. **P. G. Wright** (Slough and Uxbridge) said the Slough centre had worked in close co-operation with Watford and he paid tribute to Mr. Wilson's handling of the problems which had faced them. Three hours for the test was probably too short and he hoped that in future the time would be extended.

Wandsworth's Experiences

Mr. **W. Johnson** (Wandsworth) suggested that there should be regular revision of the Classification Scheme, otherwise it could not take care of the developments which should be allowed for in a fitter's training. In particular, something would have to be done about industrial fitters; there was also a need for highly skilled maintenance men—fault finders. For three years at Wandsworth they had been giving part-time tuition to their boys, covering ancillary subjects and training in theoretical and practical gas-fitting, and judging by the results of the City and Guilds examinations it seemed that they would see a reasonable return for their effort. If they did not get the right type of boy they were wasting their time; he could say that there had been a definite improvement at Wandsworth in the type of boy they were recruiting.

Mr. **L. G. Kimmins** (Ascot) spoke of the difficulties in small undertakings where there were possibly only three or four trainees, and suggested that one of the things the Area Boards might do would be to centralise the training arrangements. Generally speaking, fitters from the small undertakings came out very well in comparison with those from the larger undertakings who presumably had better opportunities.

Mr. **S. H. Edwards** (Southampton) said the examination methods at Southampton were similar to those at Watford. A boy was compelled to attend a day class of instruction at the technical school in English, drawing, elementary science, and practical gas-fitting in preparation for the City and Guilds of London examination. During the post-war period certain of their young fitters returning from the Forces required some further training to prepare for the final City and Guilds examination, and to accommodate them as well as to provide training for others in preparation for the Classification Scheme they persuaded the local education authority to organise evening classes of instruction, and although the response was not up to their anticipations they were satisfied that there would be some improvement next year.

Mr. **J. L. Stokes** (Hastings) said a strong lead had been given by the Examination Sub-Committee in suggesting papers for the various grades. It was up to the seniors to submit the practical examination papers to the Examination Sub-Committee, and he felt sure that if the panel was falling below the standard they would hear about it very quickly.

The Author's Reply

Mr. **Wilson,** replying to the points raised in the discussion, said they always endeavoured to create an easy comfortable atmosphere for nervous candidates. With regard to the time taken, they found that 30 minutes was the minimum in which they could get some of the more inarticulate men to express themselves. He liked the idea of a cubicle for each candidate, but unfortunately the centre had to serve many purposes and they could not utilise the necessary amount of space. It had been stressed by the Examination Committee that before a candidate was submitted for examination in a particular grade his application should be vouched for by his Company. The written examination papers were marked by the Examination Sub-Committee, or by persons appointed by them. Their instructors in theory and practical training were ex-Gas Light and Coke Company men, so they had every confidence in them.

Recruitment had not been so satisfactory as he would wish, but there had been some success as a result of going round to the schools and talking to the school leavers about the advantages of becoming skilled craftsmen, and particularly craftsman gasfitters. On the question of a common syllabus for all centres, a good deal of guidance had been given in the first instance by the Examination Sub-Committee, including specimens of examination papers and a general overall indication of what the tests should comprise.

He liked Mr. LeFevre's idea that youngsters should not work on the district between the ages of 15 and 17 and that they should introduce a form of day-time instruction for young apprentices if possible. They would accept men in the Watford area subject to their having certificates from other areas, and he felt sure that if their fitters went into other districts they would be accepted. He would welcome complete standardisation of the practical tests. The lack of such standardisation was a weakness in the scheme.

On the proposition of Mr. **W. M. Paterson,** seconded by Mr. **A. G. I. Anderson** (Bognor Regis), a vote of thanks was accorded to Mr. Wilson for his paper.

ARTS AND CRAFTS EXHIBITION

An exhibition of Arts and Crafts was opened by Dr. E. V. Evans, O.B.E., on April 4. All the exhibits are the work of employees and pensioners of the South Metropolitan Gas Company. The work is of an excellent standard and, as Dr. Evans mentioned in his short opening address, it is amazing to think of people doing a day's work and then doing such things in the evening. There are over 550 exhibits including oil paintings, water colours, etchings, pencil and line drawings, photographic prints and transparencies, pottery, modelling, sculpture, toys, dolls, furniture, woodwork, leatherwork, metalwork, needlework, embroidery, soft furnishings and electrical and scientific apparatus. One of the most outstanding exhibits is a doll with a large wardrobe which has already collected a lot of money for charity.

COKE SALES CIRCLE

A general meeting of the London and Counties Coke Sales Circle was held at Gas Industry House, on Mar. 31, the Chairman, Mr. F. S. Evans, presiding. The main item on the agenda was a paper by Mr. G. H. Fuidge (South Metropolitan Gas Company) on 'Experiences in Dealing with Coke Complaints,' an abstract of which will be found on p. 172.

The **Chairman** said that at the inaugural meeting of the Circle on Jan. 7 it was agreed that the newly elected Management Committee should co-opt three more members to bring the total up to 12. This had been done, the members nominated by the Management Committee having accepted, namely: For the producers, Mr. F. W. Freeth (Southampton Gaslight and Coke Company); for the distributors, Mr. Michael Franklin (Charles Franklin, Ltd.) and Mr. W. A. McCormick (Stephenson Clarke, Ltd.). Mr. Franklin had sent an apology for unavoidable absence from the meeting.

The **Chairman** also reminded the members that the rules and regulations governing the Circle were generally agreed at the first meeting, it being left to the Committee to agree the final wording regarding the retirement of Committee members. The rules had been circulated to members together with the notice convening the present meeting and the report of the inaugural meeting. He invited comment from the meeting and an expression of opinion as to whether the rules should be submitted for formal ratification at the meeting of the Circle to be held in May.

It was unanimously agreed that the rules as submitted should be adopted forthwith.

The Engineers and Managers and staffs of the Border gas undertakings of Galashiels, Hawick, Innerleithen, Kelso, Melrose and Selkirk recently met in Galashiels for a detailed discussion on gas water heaters. Mr. G. F. Jenkins, Sales Manager of Main Water Heaters, Ltd., dealt with typical installations and the features covering construction, installation and maintenance of his firm's post-war range of circulators, storage and instantaneous water heaters, by means of slides and section models. The arrangements were principally made by Mr. Wm. C. Campbell, Engineer and Manager of the Galashiels Gas Company, who acted as host at the meeting and at the high tea which followed.

EXPERIENCES IN DEALING WITH COKE COMPLAINTS*

By G. H. FUIDGE,

Chief Physicist, South Metropolitan Gas Company

IT should not be concluded that the most important part of the duties of a coke salesman is to deal with complaints. To put the matter in its correct perspective I have obtained some figures for complaints received by my Company; the total number amount to about 2.5 per 1,000 tons, and in the case of domestic deliveries about six per 1,000 deliveries. I think that it will be agreed that having regard to all the circumstances this is not a high figure.

I am not a member of the Coke Sales Department of my Company, but am in the Central Laboratories. It is the task of my department to provide technical information to the various Sales Departments of the Company. The staff of the Coke Sales Department are fully capable of dealing with most of the technical problems connected with the use of coke and only in unusual cases do they refer matters to us. On the other hand, in the days when the sales of coke were being developed, particularly for domestic purposes, we played a somewhat larger part in the organisation.

My Company, of course, is both a producer and supplier of coke. Members of the Circle from distributors may feel that this will cause me to be prejudiced and unsympathetic to complaints of coke quality. I can only ask them to accept my assurance that it is not so.

The fact that I have been concerned with both production and utilisation may perhaps enable me to give a more complete picture of the background to coke complaints than had I been merely concerned with the utilisation.

Classification of Coke Complaints

Coke complaints can be divided into two main groups: Those in which the customer states that the coke is unsatisfactory solely as the result of his inspection of the delivery, and those in which the customer finds that the coke does not give satisfactory performance.

Complaints in the first category are normally made immediately after delivery and before the coke is used; they include imputations of poor grading, possibly of excessive breeze, and also of excessive moisture, all of which are judged by visual inspection. The implication of the complaint is, of course, that because of the visible shortcomings, the coke will give unsatisfactory performance. It is our experience that these visual assessments of the quality of the coke can be inaccurate. For example, small variations in grading are sometimes very obvious, yet the differences may be insufficient to affect the performance of the coke in use. Experienced coke service representatives can usually judge the significance of the alleged shortcomings in quality and we find that although in most cases there is some justification for the complaint, it is very seldom that the coke is actually unsuitable, and with advice the customer usually has no difficulty in obtaining satisfactory results from the delivery in question. If the appliance, industrial or domestic, is very susceptible to small changes in coke properties, then it is likely that it is unsatisfactory in some respect.

At the same time, the producers realise that this type of complaint should not arise, and we must admit that the efficiency of grading still leaves much to be desired, and this is at least in part due to difficulties in obtaining new grading plants and replacements for old plants. Every endeavour is now being made to remedy this situation, and a Sub-Committee of the London and Counties Coke Association is actually engaged in a study of coke preparation methods.

The second category of complaints which involve unsatisfactory performance are conveniently divided into groups according to the purpose for which the coke is used. I will endeavour to indicate in each of these groups the types of complaints we have received and our views as to the cause for the complaints and the steps that we took to overcome the difficulties the consumers were experiencing.

Coke for Industrial Purposes

The most important industrial use of coke is, of course, steam raising, and experiences in the use of coke on Lancashire boilers can be taken as typical of most of the industrial uses. The type of complaint of which we have had most experience has been concerned with clinker difficulties of various forms. This is a particularly interesting form of complaint because the true explanation is often far from what at first sight appears to be the obvious one.

Some years ago a number of complaints were received to the effect that the clinker was sticky and difficult to remove from the bars, and in extreme cases that the bars were being burnt out in a short time and that molten clinker was running into the ashpit. It was justifiably assumed that the cause of the trouble was that the ash had an unusually low fusion point; a visual inspection of the fire often seemed to confirm this, for running clinker could be seen which did not appear to be particularly hot. We carried out a comprehensive investigation in the laboratory into the problem, and our conclusions may be summarised as follows:—

In no case was there any connection between the fusion point of the mixed ash as determined by the normal laboratory method and the incidence of running clinker or other clinkering difficulties. The ashing of individual lumps of coke and the testing of the ash from each lump showed wide variations, and the fusion points ranged from 1,000 to 1,500°C. Again, when the fused and unfused portions of a mass of clinker were separated, the average fusion point of the fused clinker was very similar to that of the unfused ash; similarly, pieces of the clinker that had run through the fire bars in a Lancashire boiler had the normal fusion point of about 1,250°C.

An Experimental Furnace

We constructed an experimental furnace in which, by means of pyrometers, we could determine the temperature in different parts of the fuel bed at various combustion rates and using cokes from a wide range of coals. It was found that the maximum temperatures in the fuel bed were of the order of 1,400-1,600°C., and were above the fusion point of the ashes from almost all the coke pieces. With a uniformly distributed supply of air to the grate, even at high rates of combustion, the clinker, although having a completely fused top surface, had only a partially fused under surface and did not adhere to the fire bars.

We therefore came to the conclusion that clinker troubles were due to some special conditions in the fuel bed. We usually found that clinker troubles were occurring when boilers were fairly heavily loaded and burning more than 12 lb./sq. ft. of grate area per hour under natural draught conditions. It appeared that the troubles were due mainly to unsatisfactory firing procedure combined with poor grading of coke.

Complaints of clinkering difficulties have sometimes arisen from a boiler plant dealing with very variable loads having high peaks, the grates slagging over when there has been a sudden drop from a high combustion rate. Under these conditions the lower part of the fuel bed and the firebars receiving little cooling air become overheated by radiation from the upper portions of the firebed allowing the clinker to soften and adhere to the bars.

It has been necessary to emphasise to customers that while with natural draught coke will give a good performance under reasonably steady load, forced draught is required if the boiler is to meet heavy peak demands. Since in forced draught grates the space between the firebars is narrow, the air passes through at high velocity and keeps the grate sufficiently cool to prevent adhesion of the clinker.

Summarising, therefore, clinkering complaints with steam boilers are usually the result of the plant being of inadequate capacity and the use of unsatisfactory firing methods. As with most other troubles connected with coke, the supply of well graded coke free from breeze, goes a long way towards providing a solution.

In our experience very few complaints are received from central heating boilers and similar fairly large appliances used in commercial and the larger domestic premises; the appliances are usually fully adequate for their duty and are not sensitive to small changes in coke quality.

The use of coke for truly domestic purposes is best sub-divided into use on boilers, on open fires, and on openable stoves, since each type of appliance presents rather different problems.

The Domestic Boiler

Of the complaints of unsatisfactory performance of coke on domestic boilers, the most frequent is inability to bank the fire overnight in small boilers. This is one of the most difficult problems in connection with the domestic use of coke. The facility of a fuel to remain burning unattended for a long period depends upon two factors—the weight of fuel held by the fire box and the lowest rate at which the fuel can be burnt without extinction.

The complaints are usually associated with very small boilers which have a small fuel box capacity. With normal high temperature coke it is not possible to maintain combustion at rates much below 0.7 lb./hr., and a boiler of 0.49 cu.ft. capacity

* From a paper presented to the London and Counties Coke Sales Circle, March 31.

represents the minimum from which an 8 or 10 hour banking period can be obtained, and even so the conditions are so critical that it would be impossible to guarantee this service with such boilers. It is partly for this reason that the British Standard No. 758 stipulates a minimum fuel capacity of 0.6 cu.ft.; the additional fuel capacity can be obtained if necessary by merely fitting an extension ring between the top of the water ways and the cover plate. With a 0.6 cu.ft. capacity boiler properly controlled there should be no difficulty in getting a banking period of 12 hours or more.

Unfortunately, there are still large numbers of the very small boilers in use, and in our experience banking difficulties are aggravated by faults in the appliance and in the methods of the user.

With regard to the appliance, we have found many instances where doors and dampers may be so ill-fitting that it is not possible to cut draught down to the small amount required for banking conditions and combustion rates may be so high that the fire burns out during the night period. The consumer may have insufficient knowledge as to how to operate the dampers.

Occasionally there are complaints of inadequate hot water; they are only occasional because the domestic boiler is usually capable of supplying far more water than is required in the average household. It is sometimes the case, however, that several radiators are fitted into the system from a hot water boiler of insufficient capacity to supply them. Apart from this, a complaint that the supply is inadequate is therefore probably due to some fault in the installation or the hot water system. Poor flue arrangements or bomb damaged chimneys may result in the flue pull being inadequate. The boiler surface and pipes may have become badly furred.

Difficulties in obtaining adequate water are aggravated by the present day higher ash and shale content of the coke, and careful cleaning of the fire is necessary to prevent it becoming clogged with ash and shale.

The Open Fire

The use of coke in open fires is a subject in which I am particularly interested, since it was the task of a few of my colleagues and myself to develop the early 'Metro' coke grate and to introduce it into South London. Our tests in the laboratory, combined with experience on the district, showed that the behaviour of coke on an open fire depended on many factors, including the construction of the appliance, the conditions of installation, the methods used by the customer, and, to a smaller extent, the properties of the coke. In the early stages all complaints were passed to my department. We found that we were able to classify them into groups with their causes and the remedies, so that when the time came to hand over to the district staff, we could provide them with a comprehensive code of instructions for dealing with complaints. There have, of course, been many developments since those early days, but in essence the information in the code is still applicable.

We have endeavoured to forestall complaints due to faults in the appliance and installation on the one hand and to inexperience of the consumer on the other hand, first by having a small staff of coke fire estimators who supervise the installation of any coke grates purchased through the Company and who are also able to instruct the customer in the use of the appliance. Secondly, the staff of coke service representatives deal with installations which have not been fitted by the Company and are more concerned with matters pertaining to the coke. We find that visits by the service representatives are very necessary, since it is seldom that the maker's instructions card reaches the tenants of the property equipped with coke grates.

The most usual form of complaint, particularly from customers using a coke fire for the first time, has been the simple blunt statement that the coke will not burn. This might mean anything, but usually means that the customer has been unable to light the fire. This might be due to a fault in the appliance, particularly in the positioning or arrangement of the burner. Due to incorrect drilling or incorrect positioning of the burner the flames may foul the fire bars or may be directed at too flat an angle, so that they do not penetrate the coke mass adequately. Similarly, if the gas rate is far from the correct amount, either too low or too high, ignition may be unsatisfactory. We have recently had complaints of excessive gas consumption for lighting which were found to be due to the omission of the restrictor in the supply to the burner, so that the gas rate was of the order of 100 cu.ft. per hour.

The presence of a back boiler may cause lighting difficulties, particularly if it is low in the grate or if the boiler flue cannot be closed. In such cases the gas flames can be drawn directly into the boiler flue almost without entering the fuel bed. We have found it necessary to stipulate definitely that the coke fire must not be fitted in front of a boiler which is lower than 6½ in. from the hearth or less than 7 in. back from the front of the grate, and that the boiler flue must be fitted with an adequate damper.

Lighting difficulties may be the result of the inexperience of the consumer, a frequent cause being the partial filling of the grate. As would be expected, it is not understood that whereas a coal fire lights most easily with a small amount of coal, the coke grate requires to be filled. Sometimes an inadequate amount of gas is used, the tap may be only half on, or the gas may be kept alight for too short a time. Unfortunately, in such circumstances the lighting procedure may be repeated a number of times still without obtaining ignition.

An important aspect of the lighting problem which is perhaps not widely realised is that if the coke is not properly lighted it does not necessarily go out immediately, but may continue to burn sluggishly for many hours, giving the impression that the coke is of very poor combustibility, whereas the coke is usually found to burn quite satisfactorily when it is properly lighted.

The failure of a coke fire to give its correct performance is frequently attributed to inadequate chimney draught, it being thought that a coke fire requires a specially good draught. This is not so, however; with open fires chimney draught has virtually no effect on combustion and is only required to vent the products. It is, of course, essential that the chimney does not suffer from downdraught, otherwise there will be complaints of fumes entering the room. It has been found necessary to include in the sales leaflets the warning that a coke fire is not a cure for downdraught, and our coke fire estimators pay particular attention to this point at the time of estimating, giving advice if necessary as to how chimney defects can be remedied. Other cases of products entering the room have been associated with basket fires due to the primary flue not being carried up to the gather of the chimney.

Occasionally complaints are received that the fire gives inadequate heat. In a few cases we have found that the fire itself was satisfactory and the trouble was really due to excessive ventilation of the room, caused by a high chimney pull. Such cases have been dealt with by fitting a restricting register plate in the flue with an opening of about 30 sq. in.

The presence of a back boiler, particularly if it is in a low position, in addition to giving lighting difficulties, may cause the heat output to be inadequate. The only satisfactory cure is, of cousre, to raise the boiler, but sometimes we have been able to effect a partial cure by bringing the grate forward so as to give a greater fuel bed capacity. The modern coke fire units incorporating a boiler are, of course, designed to give a satisfactory output of radiant heat as well as adequate hot water.

The Openable Stove

This appliance, which has a high efficiency, has been fitted in many post-war buildings including many of the prefabricated houses. It incorporates features both of the open fire and of the domestic boiler and gives particularly good results with coke. Unfortunately, some of these appliances have a very small fire box and complaints of insufficient heat and of banking difficulties have been received. With openable stoves the proportion of the total heat output in the form of radiation is lower than from an open fire, and experience has shown that the appliance must have a fire box capacity of at least 0.5 cu.ft. to give satisfactory results. To obtain a reasonable output of radiant heat it is necessary to use No. 2 broken coke, which makes the problem of banking more difficult with a small fire box. Better space heating can be achieved from the small stoves using No. 3 boiler nuts by using a free standing stove or directing the warmed air from an inset stove into the same room as the appliance.

DISCUSSION

The **Chairman** (Mr. F. S. Evans), in opening the discussion, recalled a recent complaint which came through a distributor from a consumer who had changed the fuel for his central heating plant four times and was still unable to get it to burn properly. Whether the dampers were pushed in or pulled out made no apparent difference, and when it was suggested that the chimney might be swept, the consumer declared that it had been swept quite recently. On inspection, however, a large blackbird was found lodged in the chimney, and the coke quality was perfectly satisfactory from the moment it was removed.

Mr. **H. H. Field** (Charringtons) said that, with regard to the proportion of complaints per delivery, in the coal trade before the war they made an analysis of their complaints. Out of every 100 complaints, 95 had nothing to do with the quality of the fuel, two and a half were due to fuel size only. Fifty per cent. of the total were due to faults of installation in the appliances; 40 were due to mismanagement of the appliance, usually by the housewife, and 5 per cent. were due to small imperfections in the appliances. Those figures had not varied very much since the war, and it was up to those who were concerned with coke sales to learn all the things that Mr. Fuidge had told them.

Mr. **E. G. Castle** (Hall and Company) remarked that Mr. Fuidge had tried to put the matter in the right perspective. When he spoke of six complaints per 1,000 deliveries he presumed he was speaking from the experience of his own Company; if those experiences had been based on the coal merchants' angle the ratio would have been somewhat higher. Their consumers related

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their experiences with coke to the use of other fuels, particularly anthracite, and it was not surprising that coke was not regarded quite so favourably. Banking of fires overnight was a problem that was likely to remain for some time to come. It was good to know that new domestic boilers would have larger fire boxes, but there would still be the old ones to contend with for a long time to come. The highest possible quality of coke should be produced, and consistent and correct sizing should also be aimed at. The open coke fire when it was good was very good, but when it was bad it was just horrid.

On the question of fuel quality, some of them had been led to believe that vertical retort coke was the ideal for open coke fires and that horizontal retort coke was likely to give more trouble, although it was better suited for the domestic boiler. He wondered whether Mr. Fuidge could enlighten them on the merits of vertical and horizontal retort cokes for those different purposes. Did the producers as a rule, in their own direct domestic supply trade, invariably supply one or the other of those two types for their respective jobs?

Mr. **P. J. Cathcart** (South Suburban Gas Company) said Mr. Fuidge's figure of six complaints per 1,000 deliveries compared very closely with the complaints in his own Company at the present time, but that figure did not give any true indication of coke quality. Before the war they were getting anything up to 25 complaints per 1,000 deliveries, and at that time they were able to choose their own coal, and the ash was between 9% and 10%. Today the ash came to anything between 10% and 17%, and the fact that the proportion of complaints was so much less led him to believe that the public were prepared to accept lower standards nowadays and did not complain about anything until it was really bad. In quite a lot of deliveries from the smaller works one got a maximum proportion of large coke, and then a maximum of small, due to segregation in the hoppers. In the smaller works the plant capacity was not sufficient to cope with the increased demand for broken coke, with the result that there was a tendency to overload the screens and consequently poor grading.

Mr. **L. W. Taylor** (Croydon Gas Company) advocated personal calls whenever possible as a means of gaining and holding the confidence of the consumer.

Mr. **G. G. Champion** (Gas Light and Coke Company) suggested that there was no such thing as bad coke, but there was, he agreed, 5% more breeze in every delivery of coke now than there was before the war.

Mr. **C. Barwell** (British Mineral Corporation) said that even the National Coal Board set an example of how to avoid complaints by charging less for 'through' coal than they did for large screened. There had been an increasing tendency on the part of coke producers to sell coke containing up to 5% of breeze at the same price as coke nuts or broken coke. On the whole the consumer was quite reasonable and was prepared to accept the difficulties with which the coke producer had to contend—shortages, inadequate screening plant, &c.—but he was annoyed at having to pay the same price for coke containing a high percentage of breeze as for properly screened coke which, according to the London and Counties Coke Association specification, had to pass over 1¼ in. mesh.

Mr. **Daniels** (Batchelors) asked what steps could be taken to increase the reactivity of coke, and whether they were possible in the near future.

Mr. **R. A. Kyle** (Charringtons) said no mention had been made of sulphur conditions. They received a lot of complaints about sulphur in connection with cast iron boilers. Distributors were selling coal and coke, and he understood the object of the Coke Sales Circle was to promote the sales of coke. They had to have their arguments ready, and if it was proved to be a fallacy that the sulphur content of coke attacked a cast iron boiler they should be told about it. Consumption of coke had gone up on certain jobs with the result that complaints had increased, mostly in regard to ash content; the answer was that the ash content of the coal from which it was produced had gone up.

Dr. **F. J. Eaton** (Gas Light and Coke Company) said Mr. Castle had raised a question about coke quality for open fires and he would like to answer that question. They could make a satisfactory open fire coke either from continuous vertical retorts, intermittent verticals, or horizontal retorts, or even from coke ovens. He had been quite surprised on visiting the 'Good Heating for Every Home' exhibition to find that cokes from all those sources were available for the purpose. The main point about the open fire market was that they should supply the same type of coke to the same consumer. In fitting coke grates in front of back boilers they had come across difficulties which they had always been able to overcome by blocking up the back flue entirely. The difficulty in regard to draught in open fires was quite easily overcome by fixing a piece of sheet metal to rest on the chair brick in the front and to slope upwards and backwards. In the case of combined hot water and radiator systems there was inevitably a fuel waste and they were liable to get complaints of insufficient hot water. His Company had recently developed a small automatic control valve which shut off the circuit to the radiator when the domestic hot water supply fell below 140° F. and they hoped to get such valves on to the district and see what reduction in fuel wastage took place.

Mr. **G. H. Fuidge,** in a brief reply to the points raised in the discussion, said it was important to educate both the builder and the housewife. The number of complaints that were actually due to the fuel was quite small. He agreed with remarks that had been made about being tactful in dealing with complaints. It was just as important to deal with complaints properly from a psychological point of view as it was from a technical point of view. Mr. Castle had mentioned the higher incidence of complaints that the distributors received and had mentioned comparisons with anthracite. The main difference was that anthracite had a higher bulk density and the problem of overnight combustion was much more simple than with coke. Supposing one could get 15 lb. of coke into a small boiler, the same boiler would take perhaps 25 lb. of anthracite, and the greater density of the fuel solved the problem of overnight stoking. There were corresponding differences between horizontal and vertical retort coke from the point of view of overnight combustion; the higher density of horizontal retort coke gave it a slight advantage. They in South London boasted that they introduced the first of the modern type of coke fires. It was launched as an entirely new thing and it gained immediate popularity and was followed by other people. Their original market was built on the use of horizontal retort coke. Vertical retort coke had an advantage in being of less density and would ignite on a smaller amount of gas. It was therefore important that each consumer should be supplied consistently with the same type of fuel.

With regard to sulphur the position was that the sulphur content of coke was approximately the same as the sulphur content of the coal from which it was produced. Although coke formed about 70% of the coal, a certain part of the sulphur in the coal was volatile and passed into the gas, so that the proportion left in the coke was of the same order as in the original coal. A certain amount of corrosion arose from the fact that there was no tarry matter in coke. The tar in coal tended to form a protective layer. Corrosion required the presence of water, and corrosion which was suspected to have been due to sulphur was most likely due to wet coke.

LONDONDERRY EXTENSIONS

A special meeting of Londonderry Corporation, on April 7, decided not to proceed further with negotiations for the purchase of the Londonderry Gaslight Company. This decision was taken after reports by experts and a special sub-committee had been considered. They gave the Council their considered opinion that no benefit would accrue to the Corporation or to the consumers by taking over the undertaking. An amendment that the Corporation should purchase the undertaking at £85,000 was negatived by nine votes to three. The Gaslight Company has applied for authority to raise a loan for the extension of the existing plant to meet increasing demands.

HISTORY OF BRADFORD'S UNDERTAKING

In presenting his final report on April 8 to the last meeting of the Bradford Gas Committee prior to the nationalisation of the undertaking, Mr. H. Johnston, Engineer and Manager of the Bradford Gas Department, who has been appointed Chief Engineer of the North Eastern Gas Board, recorded a number of historical facts concerning the undertaking.

Formed originally in 1821, Bradford Gas Light Company obtained, a year later, authorisation to construct works for the manufacture of gas to supply Bradford, and the townships of Manningham, Horton and Bowling. The Mill Street works first supplied gas on Sept. 17, 1823, to a limited part of Bradford, whose total population at that time did not exceed 26,000. Further gasworks were introduced during the next 30 years, and developments were made between the 60's and 70's. The Bradford Corporation then purchased the undertaking in 1871 for £210,000, and opened the Birkshall works in 1883, and the chemical works at Frizinghall were bought. During 1901 and 1902 the Corporation acquired by agreement the undertakings of North Brierley Gas Company, Clayton, Allerton and Thornton Gas Company, Eccleshill and Bolton Gas Company, and Airedale Gas Company. Then followed comparisons of gas sales since 1847—in 1847, 33,000,000 cu.ft.; 1872, 579,000,000 cu.ft.; 1897, 1,562,000,000 cu.ft.; 1922, 1,912,000,000 cu.ft.; 1947, 2,814,000,000 cu.ft.; 1948, 2,804,000,000 cu.ft.; and in 1949, 3,294,000,000 cu.ft.

In 1847, there were 103 miles of mains, which by 1948 had increased to 596. The contributions to relief of rates made by the Department amount to £1,245,128, with £645,283 by direct contributions, and £599,845 indirect contributions (street lighting paid by the Department). The direct contribution to the rates increased from £7,000 in 1930 to £25,000 in 1948, and since 1928 the Department has shown but one loss—£4,501 in 1939.

COMPANY MEETING

WEST YORKSHIRE GAS DISTRIBUTION COMPANY

GRID'S SUCCESSFUL ACHIEVEMENT

THE eleventh annual ordinary meeting of the West Yorkshire Gas Distribution Company was held on Mar. 29, in London. In the absence of Mr. M. H. Tetley, the Chairman, Colonel W. MONCRIEFF CARR, O.B.E., T.D., presided and submitted the Chairman's speech, which was as follows :—

The accounts for the year 1948 have been in your hands for some time and there is comparatively little to which I need call your attention. After allowing for the maximum dividend of 10% for the year we have a surplus of £3,138, which we propose to add to the carry-forward.

The excess provision for rates made in previous years, amounting to £5,875, is still held in reserve so our financial position is very sound. It is true that we have only allowed for depreciation at half the rate permitted, but we consider this ample.

During the year under review we had many anxious moments in meeting the demands for gas, but mainly because of the mild winter quarters in 1947/48 and 1948/49 we were able to meet the needs of our associated companies and in addition supply Bradford Corporation Gas Department with 646 mill. cu.ft. of gas.

In accordance with the price scale in our sales agreement, the average price paid by Bradford was 15.84d. per 1,000 cu.ft., which is substantially below the average actual cost to us of the manufactured and coke oven gas we have purchased during the year.

We have claimed an additional 4d. per 1,000 cu.ft. from Bradford, but this claim has been disputed and the matter has not yet been settled. The amount involved as at Dec. 31, 1948, was £20,676 and we have provided in the accounts an equivalent sum as a provision for doubtful debts.

As regards new plant, the C.W.G. plant at Glasshoughton is making very good progress and will be ready for next winter's load, and the site at Tingley is now ready for the erection of the new plant to begin.

In its short life this little Company of ours has accomplished a good deal, and I hope it has demonstrated to the gas industry as a whole that large scale distribution of gas at high pressure is a practicable proposition where there is sufficient concentration of population and industry, and where gas can be manufactured at pit-head and purchased at economic rates.

This is our last general meeting, and before closing I should like to pay tribute to the far-sightedness and persistence of Colonel Carr, who brought the Company into existence and watched over its progress with such loving care, to the hard work and keenness of all our principal officers, Mr. Hodkinson, Mr. Taylor, Mr. Knowles, and Mr. Roberts, and last but by no means least, to all those in humble positions, who by their whole-hearted loyalty and enthusiasm have kept the system in good repair, often under very difficult conditions, and frequently effected major repairs in absolutely record time.

Those of us who are being dropped quietly overboard on May 1 are proud to have been associated with this enterprise and we wish those who are carrying it over every possible success. We know they have got a good thing and trust they will use it properly.

The report and accounts were unanimously adopted, and the meeting concluded with a resolution that a vote of thanks be conveyed to the Chairman for his excellent work on behalf of the Company.

GAS UNDERTAKINGS' RESULTS

South Western Gas & Water Corporation

A second interim dividend of 3½% (actual), less income tax at 9s. in the £, for the year ended Dec. 31, will be paid on May 20, making a total dividend of 5½% for the year. It is not the intention of the Board to declare any further dividend on the Ordinary stock in respect of 1948.

Australian Gas Light Company

The Directors report that the net profits for 1948, including the balance of £136,406 brought forward, amounted to £280,580. An interim dividend of 2½% was paid in August and a final dividend of the same amount was declared at the annual meeting, leaving a balance of £37,580 to be carried forward. The Directors consider that the financial position of the Company will remain unsatisfactory until the Government permits the Company to increase its price of gas to meet steeply rising costs of production, over which the Company has no control.

Leamington Priors Gas Company

Presiding at the annual meeting on Mar. 29, Dr. Harold Mason said the net balance of £26,954 on profit and loss account showed an increase of £13,893 over the commencing balance. Gas sold in 1948 totalled 785 mill. cu.ft., representing an increase of 11% over 1947, and was the highest recorded in the Company's history. Dividends for the half-year ended Dec. 31, at the rate of 10% per annum on the 'A' Ordinary shares and 7% per annum on the 'B' and 'C' ordinary shares, less tax, were declared. Long service certificates were presented to pensioners and employees who had completed 40 years' service.

Newport (Mon.) Gas Company.

Gas sales for 1948 set up a new record, being 9.17% over 1947 and almost five times the sales of 1938, excluding the sales to Chepstow and Caldicot, which have trebled their combined sales since the last complete year prior to taking the bulk supply. Including the supply to these two companies, the output is 5½ times that of 1938. From July 1 last year the price of gas has been raised by ¼d. per therm. The revenue account shows a profit of £20,984 compared with £28,636 for 1947, and a final dividend of 6% has been declared for the half-year ended Dec. 31, making a total dividend for the year of 8½%, less tax. A balance of £26,811 is carried forward against £23,143 brought in.

TRADE NEWS

Air Control Installations, Ltd., Ruislip, Middlesex, announce that they are opening a branch office at 19, Temple Street, Birmingham, 2. (Telephone : Midland 2546.) The office will be under the management of Mr. A. W. Evans, A.M.I.H.V.E.

* * *

The telephone numbers Hartington 230 and 226 of the Derbyshire Silica Firebrick Co., Ltd., have been discontinued and changed to Youlgreave 271 (three lines). Communications after working hours may be made either on Youlgreave 271 (to Mr. N. A. Lloyd, General Manager), or Youlgreave 273 (to Mr. E. L. Astle, Resident Foreman).

* * *

The Brockhouse Organisation announces that its London office has been transferred from 25, St. George Street, W.1, to 25, Hanover Square, W.1 (Tel. : Mayfair 8783). The new premises accommodate the Brockhouse Advertising and Publicity Department, formerly at Head Office, West Bromwich. It is also reported that Mr. S. J. Lewis, formerly Sales Manager of the British Motor Boat Manufacturing Co., Ltd., has been appointed Assistant Export Manager of the Brockhouse Organisation, and will take charge of the export department in the London office.

Thomas De La Rue and Co., Ltd. Potterton Gas Division

The Directors of Thomas De La Rue & Co., Ltd., have decided to adopt a policy of recentralisation, and accordingly all wholly-owned subsidiaries will be absorbed by the parent Company. The sister companies, Thomas Potterton (Heating Engineers), Ltd., and De La Rue Gas Development, Ltd., will in future trade as one unit known as Thomas De La Rue & Co., Ltd., Potterton Gas Division.

The Sales Department will operate for the Northern Area from 4, Albert Square, Manchester, for the Midland Area from Portobello Works, Warwick, and for the Southern Area from Cavendish Works, Wandsworth. A Showroom will be maintained for Home and Overseas customers at Imperial House, 84/86, Regent Street, London, W.1.

Lancashire Dynamo and Crypto, Ltd.

Two thousand employees and friends of the southern section of Lancashire Dynamo and Crypto, Ltd., attended a reception and dance at the Lyceum Theatre, London, on Mar. 24. The occasion marked the fiftieth anniversary of the establishment of the Company Group and will be followed by a similar function in Manchester.

A reception of representatives of oldest employees and guests, by Mr. H. W. Bosworth, A.M.I.E.E., Chairman and Managing Director of the Company, and Mrs. Bosworth, was followed by dancing and entertainments. The singing of 'Auld Lang Syne' concluded an enjoyable evening and was a fitting climax to a notable record of a successful enterprise and development.

The history of the Company goes back to 1899 when Mr. A. P. Wood founded the Lancashire Dynamo and Motor Company in Manchester. In London, similar enterprise by the brothers J. G. and C. R. Shaw started the Crypto Electrical Company

before the end of the century. Independent progress by the two companies continued until 1919 when a trading association was established, followed in 1932 by amalgamation under the title that the Company now carries.

During the 1930's the Trafford Park and Willesden Works of the parent Company continued to develop and expand the range of their products. The call for totally enclosed dust-proof motors of higher output produced fan-cooled and later frame-cooled motors under the now well-known names of 'Fankuld' and 'Cor-cooled' respectively. To meet the specific requirements of the mining, petroleum, and gas industries, those motors were also developed with flameproof enclosures, for which 'Buxton Flameproof Certificates' have been obtained.

Since the war the Company has earned a steadily increasing reputation for the design and construction of machines for all types of specialised factory drives, including gasworks motors. The Company's products have set a high standard in design and construction and its policy of 'adopting progressive ideas to give improved performance' indicates that its record of achievement will be matched by progress in the future.

PUBLICATIONS

'Rigidal' corrugated aluminium sheet, which is now available for the building industry, is described in an illustrated leaflet issued by the manufacturers, the British Aluminium Co., Ltd., Salisbury House, London Wall, E.C.2. It is a general purpose building material specially adapted for use in agricultural buildings, residential roofing, and industrial premises. The qualities of 'Rigidal,' which make it particularly suitable for industrial purposes, are freedom from corrosion and rust combined with a high resistance to industrial fumes, negligible maintenance costs, strength, high reflectivity and thermal efficiency. Its light weight, approximately half as much per square as galvanised iron sheeting of equivalent strength, reduces the costs of transport and erection. It is also claimed that 'Rigidal' retains its initial clean finish and in weathering does not acquire a mottled appearance.

* * *

The Power-Gas Corporation, Ltd., has published in leaflet form an article by Mr. A. W. Bamforth on 'Controlled Crystallisation,' which describes some of the applications of research in crystallisation which have led to improved products for industrial and commercial use. Details are given of the Krystal process of crystallisation which is employed by the Corporation. The process has been used for the recovery of ammonium sulphate from coke oven gas plant and of coppers or iron chloride from pickle bath liquors. Other applications are for the regeneration of viscose rayon spin bath liquors by the removal of sodium sulphate, and, in the electrolytic industries, in the production of ammonium sulphate, ammonium nitrate, sodium and potassium chlorate, sodium nitrate and nitrite, and dicyandiamide. The process is outstanding for its adaptability to any crystallisation problem and for the remarkable uniformity of crystal size produced.

GAS STOCK ISSUE

The Gas Council and the Council of the Stock Exchange announced on April 12 arrangements for the change over from securities of gas undertakings to British Gas stock. A list of securities of which the value has been determined before vesting day will be published on April 29. These securities will be extinguished on May 1, and holders will become holders of British Gas stock. The Gas Council will publish the terms of issue of British Gas stock on May 2. It is also stated that transfers of British Gas stock will be free from stamp duty, and that a first payment of interest on the stock will be made on Nov. 1.

'Unvalued' securities, *i.e.*, those which have not had their compensation value determined before vesting day, will continue to be transferable on and after May 1, but the only rights which can be transferred are the right to British Gas stock, which attaches to the securities on a date to be announced after the determination of their value, and the right to receive interest from May 1. In the meantime the Gas Council is authorised to make payments on account of interest not exceeding the amount which in the opinion of the Council will be found to have accrued on the British Gas stock ultimately issued.

Provision is made in the Gas Act for subsequent adjustment of any underpayment of interest. Transfers of 'unvalued' securities on and after May 1 will be free from stamp duty, and this exemption also applies to transfer deeds arising from bargains done in 'old securities' on and after April 20 for settlement on May 10. Payment of any interest or dividend due for the final financial period ending April 30 will be made by the stockholders' representative.

To reduce claims to these and other payments to a minimum, the Council of the Stock Exchange have decided that bargains done on and after April 20 in both 'valued' and 'unvalued' securities shall be ex any dividend or interest payable before May 1 or any payment of interest or dividend for the final financial period ending April 30. An advertisement of the Gas Council, which appeared in the *Financial Times* of April 13, gives a list of the gas undertakings concerned and full details of the change over arrangements.

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